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A HISTORY OF PSYCHOLOGY

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VOL. III

MODERN PSYCHOLOGY

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NOTE

The scope and purpose of this volume, together with the general principles of construction, have been explained in the preface to the second volume, to which this volume conforms. In view of the complexity of the subject and the fact that its problems cease to be capable of purely historical treatment as one approaches the most recent period, the attention of the reader is directed to the remarks made on this topic in the second volume (pp. 5–7).

PART I

THE AGE OF TRANSITION

CHAPTER I

THE TRANSITION IN BRITAIN AND FRANCE

§ 1. Before the year 1411, when the University of St. Andrews was founded, the young Scotsman went either to Paris or to Oxford for his education. About 1265 John Baliol had founded a college at Oxford, and occasionally a student was bold enough "to brave the perils of a journey to Oxford and the treatment he met with there after he reached it." But the attractions of Paris seem to have been more alluring, and the greater number down to 1411 preferred France as a country less foreign than England. At Paris several Scotch teachers made some reputation; the national distinctions would, of course, be no barrier to a common understanding, while Latin was the language of academic instruction. The fifteenth century saw the rise of colleges at Glasgow and Aberdeen, as well as that already mentioned at St. Andrews. At the end of the sixteenth century another college (Marischal) was founded at Aberdeen, and Edinburgh University came into existence (1582)

The early constitutions of these universities followed the models of Paris and Louvain The scope of the teaching and the material were, consequently, identical with those of the later mediæval period. In the time of James II the Faculty of Arts at Glasgow prescribed in Logic the works of Aristotle and in Philosophy more Aristotle, namely the eight books of physics, the psychological treatises and some others. The history of the struggles out of which the Scotch system of education finally emerged would not be in place here. A new scheme put out in 1640 prescribed Aristotle's *De Anima* as a subject for the fourth-year course, but in 1695 the commissioners of the universities made a vigorous protest in favour of home products each university was directed to produce a treatise, and the whole collection of treatises, four in number, was to be revised and adopted by the commissioners. The scheme finally lapsed, and Scotland resigned the task of creation · fortunately it began at the same time to develop.

We have now reached the beginning of the eighteenth century, and with it a new era marked by that most revolutionary change, the change from the Latin to the vernacular language. Francis Hutcheson (1694–1746) was the first to take this step which at once gave him a distinct position Hutcheson was a pupil of Gerschom Carmichael, and it would be unfair to speak of Hutcheson as a self-made teacher; he was made by Carmichael and always bore the impress of Carmichael's teaching both in his preference for ethical subjects and his tendency to move away from the old system It was Carmichael who united in his training and his developed thought the old and the new, through him Scotland was led to oppose Hobbes on questions of politics and adopt Locke in its "mental philosophy" All this made for culture, and it is as culture that we must estimate the Scotch philosophy of this period. Its traditions kept it close to the best work of antiquity; its vitality enabled it to assimilate what was relatively new material Hutcheson naturally felt the charm of Shaftesbury, for Shaftesbury's spirit was Hellenic and his novelty had a classic flavour, in both cases it was the bottle rather than the wine that was new

Locke gave to Scotland its method and directed its thought on the new psychological lines. Hutcheson explicitly begins from Locke, with the regular machinery of external and internal senses; but he is never quite at one with Locke, and has a vague presentiment that the human understanding is not adequately analysed by the author of the *Essay*. There are two directions in which this dissatisfaction shows itself In dealing with the Understanding, Hutcheson maintains that there are ideas given along with sensations, belonging indifferently to all, such as duration, extension and number. Further, Hutcheson thinks the number of senses ought to be increased: we have a sense of Beauty, a sense of Goodness, and so on. As psychology this was poor stuff, but its historical significance is considerable. The first point seems to be a reminiscence of Aristotle; Hutcheson desires to include among the elements of the mind not only the senses but also the Aristotelian "common sense" The second tendency belongs to that part of Hutcheson's nature which produced his first work, the *Inquiry into the Original of our Ideas of Beauty and Virtue* The æsthetic vein was strong in Hutcheson; it accounts for his dissatisfaction with Locke's analysis of the understanding and also for his own uncastigated vagueness

In talking about Hutcheson, we are clearly going beyond the limits of psychology in the narrow sense. The profit of so doing consists in the fact that, sooner or later, a developed psychology has to include those topics which seem, at this stage, to lead a precarious existence as parasites of other subjects. The same remark applies to George Turnbull, a Regent in Marischal College, Aberdeen (1721–6), who represents the sterner type of mind. Turnbull had learned much from Hutcheson and from Shaftesbury, but he regarded the natural sciences as the types of true method and believed that the study of mental philosophy could be conducted most successfully by the method of observation and induction, his turn of mind is shown by his rejection of the old word metaphysics, the name for formalism

Turnbull vanished in 1727 from the Scottish academic circles In 1739 Hume's *Treatise* appeared, but its significance seems to place it in another context, and it has been discussed already (ii 272) The true Scottish succession was continued in Thomas Reid, whose lectures were attended by Dugald Stewart. During Reid's time at Glasgow (1764–86), Adam Ferguson at Edinburgh earned a great reputation; his book on psychology and ethics (*Analysis of Pneumatics and Moral Philosophy* 1766) was translated into German by Garve (1772) and reviewed by Tetens. Ferguson was succeeded by Dugald Stewart, so that Reid's influence spread from Glasgow to Edinburgh (1810). Stewart was followed by Thomas Brown (1810–20), who published his *Physiology of the Mind* in 1820 and left *Lectures on the Philosophy of the Mind* to be published after his death in 1822. The scope of thought was steadily widened by these writers Reid stood for the direct development of the Scottish philosophy, somewhat jarred by collision with Hume's reduction of Locke's doctrine to his own unique positivism Stewart developed Reid's ideas. Brown succumbed to the fascinations of Condillac and De Tracy, as interpreted by Dr. Young, of Belfast. Finally, Hamilton inaugurated a new and complex period of thought.[1]

The Scottish school, as a whole, recognizes no mechanical or physiological aspect of psychological processes. It remains distinctively within the limits of "mental philosophy." Hamilton's doctrine of sensations was influenced by the advance of physiology, but only to a slight degree. Alexander Bain was the first to develop a doctrine which is at once physiological and psychological he is therefore the only one to whom we can look for a psychological system. None the less, the earlier writers were highly esteemed by such men as Herbart and Beneke, and it will be necessary first to show what contributions they made to psychology and how they modified what was, in the main, a traditional body of doctrine.

§ 2 Thomas Reid (1710–96) may be accounted the real founder of the Scottish school of philosophy This school claims attention from the historian on account of its duration and its influence; for psychology it did but little, since it took from the first an unfortunate direction. The student of Reid's works might well be inspired with the highest expectations; for the opening promises him a complete renovation of the philosophical sciences by means of a thorough psychological analysis. The result is disappointing. The physiological groundwork is first rejected, especially Hartley's doctrine and we are told that the relation of a sensation to its external cause must be "resolved into the will of God or into some cause altogether unknown." Doubtless Hartley was wrong, but this is a counsel of despair. Reid is also much too fond of saying that he will countenance nothing that degrades the dignity of man, an attitude of mind that savours too little of science and bespeaks a prejudice in favour of sentimentalism. These were both deep-rooted tendencies of the age, and Reid often speaks as if the shadow of the mediæval theology was still upon him. While the rejection of physiology might have made Reid a good psychologist, this does not seem to have been the case. As a philosopher he took upon himself the task of answering Hume; the disastrous outcome of "idealism" was to be counteracted by a new realism. So far as the psychological part of this was concerned, all Reid's successors seem to agree in finding faults. Reid was continually at war with a doctrine about ideas which he ascribed to Descartes, but wrongly. He insisted, against this doctrine, on the immediacy of consciousness, and was uniformly understood to mean by consciousness a special faculty He spoke vaguely of "common sense," and made it impossible for anyone to say exactly what that was Whichever way we turn we seem to meet in Reid doubtful assignations of doctrines to others and unstable doctrines of his own invention

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[1] See *Edinburgh Review*, 1829–33.

The real basis of all this confusion seems to have been in the misunderstanding of Aristotle. Dugald Stewart corrects Reid, Brown corrects Stewart, and Hamilton corrects everybody. There is no sound historical learning until we come to Hamilton, and anyone who will read Hamilton's notes to Reid's works cannot fail to be struck with the fact that the whole line of Scottish writers moves from Reid onward by progressive discoveries of an unknown past. Stewart and Brown are particularly prolific in novel suggestions, adorned with footnotes which express their astonishment at the way in which earlier writers had anticipated their most original efforts. To a large extent this is explained by the history of Scottish education outlined above. In the history of psychology it was a transition period, consisting at first of a reaction against "sensualism" and later (in Brown) of direct reproduction from the ideologists who were opposing Condillac.

The Scottish school was primarily a school of philosophy.

Its problem was the general theory of perception, and Reid's merits are to be estimated finally according as he is or is not considered to have answered Hume. This subject belongs to general philosophy or to the sphere of epistemology, not to psychology. In the sphere of psychology Reid contents himself with merely stating the elementary and complex operations of the mind, refusing to accept any explanation of what he regards as primary facts, e.g. consciousness (as a faculty) and belief. In this way a large part of mental life is made immediate or innate; that is to say, the importance of the senses is reduced and Locke's "sensualism" revised The association of ideas, both name and thing, is rejected in favour of an "inductive principle." Reid was both original and right in thinking that "ideas" are not associated, but his own exposition of "experience" is equivalent to the process called by others association; if, as is probable, Reid meant to assert the activity of the mind in "experience," as opposed to "association," his distinction may be reckoned valuable That this was the case might be argued from the fact that Reid shifted the emphasis from interrelation of ideas to judgment, from mechanical union to something like a creative synthesis.

§ 3. Dugald Stewart was a man of rhetoric and poetical illustrations. Diffuse in style and unfortunate in his inventions, he is an attractive writer and gives his subject, The Philosophy of the Human Mind, new life and warmth. The spread of general culture was one of the objects at which the Scotch professors aimed; their classrooms were filled with eager listeners, lawyers and men of business, whose presence induced the lecturer to adopt methods foreign to the routine of class work. For the most part Stewart follows Reid, but he differs in many details. The doctrine of association is expounded at great length, though Stewart thinks there are no particular principles of association; anything may recall anything else Wit, fancy and invention are three of the spheres in which association is particularly noticeable; and it is worthy of remark that Stewart speaks of habit as controlling association, not the reverse. Another type of association which is quoted is that of space with time; "we speak of long and short time." Apparently any customary connection of ideas can be called an association. On the other hand, memory, as with Reid, is called a faculty and not analysed as an example of association. Association is said to presuppose "a faculty of retaining the knowledge which we require": it also implies a power of recognizing the thoughts that recur, and this is not a part of the "association" as usually defined. On the other hand, without the associating principle the power of retaining our thoughts would be of little use. From this kind of over-subtlety Stewart goes on to discuss the value of a commonplace book and the kinds of memory which excite admiration in society!

In the works of later psychologists Stewart is credited with two distinctive points. In his discussion of attention (chap. ii) he notes the fact that there are gaps in ordinary experience; attention is required as the condition of retention, but "when we are deeply engaged in conversation or occupied with any speculation that is interesting to the mind, the surrounding objects either do not produce in us the perceptions they are fitted to excite, or these perceptions are instantly forgotten." It follows "that a person may be conscious of a perception without being able afterwards to recollect it." Consciousness and attention together make recollection possible. Consciousness without attention is something different. But Stewart does not actually call these unremembered perceptions "subconscious." He regards them as forgotten links which join one idea to another without being remembered; they enable us to make sudden transitions, but "it requires a considerable degree of reflection to enable the person himself by whom the transition was made to ascertain what were the intermediate ideas." Stewart speaks in apparent ignorance of any theory of subconsciousness, and does not oppose his view to that theory. There is also some obscurity in his own view, for, if reflection can recall the missing links, there must be some degree of retentiveness in consciousness alone; whereas Stewart ascribes retentiveness to the power of attention. On attention itself he remarks, characteristically enough, that "every person must be satisfied of its reality from his own consciousness."

The other point is a criticism of Reid's statement that "imagination is attended with no belief at all." This Stewart presumes to call in question, and maintains that an imagination may be accompanied by belief and that "when imagination is very lively we are apt to ascribe to its objects a real existence." We then "feel and act in the same manner as we should do if we believed that the objects of our attention were real" This is very true.[1] It is also another remarkable sign of general superficiality; for this admission demands a complete revision of Reid's psychology and a new statement of the difference between idealism and realism but no such revision is attempted.

§ 4 In France the philosophy of the nineteenth century began from Reid In 1811 Royer-Collard was appointed professor at the Sorbonne Taine gives an amusing account of this philosopher's unfortunate situation. Condillac was still the Bible of the age; and from all such sceptical, materialistic views the new professor shrank in horror. Fresh to philosophy, with no doctrine of his own, what way of escape was open? One day, as he walked the streets, he chanced to catch sight of a little old book in a foreign language, lying neglected upon a stall, he looked at it and read the title—*Essays on the Human Mind, according to the Principles of Common Sense*, by Dr. Thomas Reid. "How much for this book?" he asked. "Thirty sous." The price was paid and a new school of philosophy founded!

This may be a myth, but it contains a truth. France was tired of Condillac and analysis. Royer-Collard was a man of order, sprung from a puritanical stock, and trained by severe discipline to enforce sound views on others. Nature may be said to have destined Royer-Collard to teach Reid's doctrines to the French, if the book reached him by chance, it was not chance that made him retain it.

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[1] Cp. Taine, *Philosophes Classiques*, p. 43. This was a law of Spinoza rediscovered by Stewart. It may lead to the doctrine that all perception is *hallucination vraie*.

"By religion and by inclination, he was the enemy of Cabanis and of St. Lambert . . . Psychology in his eyes was not an end but a means. He analysed, not in order to analyse, but to refute the materialists and sceptics." This criticism touches the weak spot in the work of this school; however much they felt the actual defects of the sensualists, these philosophers never went beyond dogmatic assertions valued for the end they served.

The edition of Reid's works prepared by Sir William Hamilton contains, by way of preface, some of the encomiums bestowed on Reid by his French admirers. They show clearly the basis of the admiration which those works excited. One writer claims that Reid brought back those *a priori* elements which Locke had so ridiculously scouted. Cousin said that Reid's mission "was to proclaim the application of the experimental method to the philosophy of the human mind, on the ruins of the hypothesis which had issued from the Cartesian school; this mission he has completely fulfilled, for he has purged philosophy, one after another, of the theory of ideas, of the desolating scepticism of Hume, of the idealism of Berkeley, of the demonstrations of Descartes; he has thus made a *tabula rasa*." No criticism need be made on this estimate beyond what history itself has delivered. Reid's purgation was too thorough; he removed much and put little in its place. The new point of view lacked all vitality; Royer-Collard, Cousin and Jouffroy adopted it without giving it any fresh vigour; it was morally less "desolating" perhaps, but for science it was no more than an elaborate epitaph. For that reason history has nothing of value to glean from the rhetoric of Reid's disciples, and France was for a time nourished on improving declamations.

In reality deeper forces were beginning to emerge. The disciples of Reid were only symptoms of a more general outbreak of sentiment. While they contented themselves with a denial of scepticism and a defence of that degree of activity which Reid and his Scotch disciples had ascribed to consciousness, a greater than these was maturing a really aggressive voluntarism. This was the next move, made by Maine de Biran.

§ 5. Though the French philosophers of this period were never very effective, Taine's view of the matter was not the last word. Progress was continually being made, and the evolution was both simple and normal. Condillac did not properly estimate the activity of the mind. Laromiguière (among others) emphasized attention and declared that there were internal as well as external senses: the statue could never have acquired such powers as are implied in the perception of beauty, moral truth and so forth. The next step to be taken was the full elaboration of a theory of activity with a consequent apotheosis of Will. By the end of 1822 Maine de Biran had accomplished this, and was by virtue of his achievement the acknowledged leader of the reaction toward spiritualistic psychology. To Taine this was darkness and anathema; yet even he wavers in his attack and makes some admissions which show him to be uncertain whether the spiritualists had not somewhere in their teachings a vein of truth.

This, in fact, they had, quite apart from their metaphysical flights or their tendency to obscurantism It was an old truth, but France was still without share of it. Leibniz revived it from Plato, and from Leibniz onward it remained a possession of Germany; it was the insight into the fact that relations imply activity. Locke had not committed himself to the kind of language Condillac used; he had not excluded activity, though he had paid more attention to its effects than to its nature. Empiricism, which began by requiring a careful history of the actual life of thought or consciousness, had allowed itself to drift into the false position of appearing to deny the life it analysed Hence the need of reaction and at the same time the barrenness of the reaction; when the life was reasserted there was nothing more to be made of it psychologically than had been made by Locke or Leibniz. In this connection Biran's development is instructive and typical: it shows a very common misunderstanding of the relation between the form and the content of a science.

Biran began in the spirit of Condillac and the atmosphere of Cabanis. His first work, *Sur l'Influence de l'Habitude à la Faculté de Penser* (1802) may be said to show signs of opposition to Condillac, but its suggestion of a theory of activity was no more than Condillac himself might have developed. Few, if any, of the great thinkers have denied activity; many of the greatest have felt that it was a metaphysical subject, to be approached gradually through the study of its manifestations, the recognizable activities. Biran was inclined to commit the error of youth and begin with the largest ideas. He quickly overcame that and definitely proposed to himself the task of uniting ideology and physiology. This was a very legitimate course to adopt, ideology seemed in need of physiology to give it body and weight: Cabanis was showing the way to a psychological standpoint; the future seemed to lie in the hands of those who could think in terms of both matter and mind. But Biran was not to be appeased by the offerings of the physiologists; he grew dissatisfied with the language of the "fibre-psychologists" and more anxious to achieve what he called the "decomposition of thought." At the stage of his development in which he produced the *Essai sur les Fondements de la Psychologie* (1813–22), he had passed from sensationalism as he understood it, acquired from Leibniz a belief in activity as explaining those contents of the mind which are not sensations or compounded out of sensations, and made some acquaintance with the developments in Germany down to Kant The work has been variously estimated; in most cases without any attention being given to its title. The author writes entirely under the limits of the title; his work is not concerned with psychology but with its fundamental presuppositions; it is meant to be a critical introduction to all future psychologies. The criticism is often acute, the constructive parts ultimately collapsed.

Undertaking the "decomposition of thought" in 1805, Biran announced his opposition to the method of the analytical school. The term decomposition is meant to imply that thought will be treated as a whole admitting distinctions, not as something which is put together by adding parts. As a result of thus opposing the traditional method of beginning from sensations, Biran denies that attention is sensation, or that memory is the persistence of images, or that will is matured desire. Biran has now read the literature of his subject and can criticize Hobbes, Bonnet and Gall. these writers ignore the very object of psychology, the immediate consciousness itself. Elsewhere he traces this development as the outcome of Francis Bacon's teaching, and says that Bacon has only led his successors *dénaturer psychologie*. The point is well expressed· the science of the mind had actually tended to become the application to the mind of some other science, especially physics or physiology Biran clearly announces the value and the need of an independent psychology, a pure science of the facts of consciousness.

The ancient theory of the soul was no longer regarded as the object of any science. Biran did not make the mistake of opposing to the empiricist any effete doctrine of substance He read Locke carefully and discovered how that writer distinguished between soul and self; he knew Descartes' position well enough to realize the fundamental importance of immediate consciousness, finally, he was equipped by Leibniz with the idea of activity The last point is for Biran cardinal; he links the three positions together and offers as the postulate of his psychology an active Ego defined in terms of actual consciousness

To make it valid this fundamental proposition has to be worked out in all its implications. The praise which Biran gave to J J. Rousseau and Pestalozzi shows his leaning toward a treatment of the mind which will be concrete, practical and mindful of the affective side The main lines of development are as usual; attention is emphasized and discrimination made to depend on it, consciousness has four levels—the affective, the sensitive, the perceptive and the reflective. These differ in the degrees of effort which they exhibit, the first being the life common to man and animals, obscure and devoid of self-recognition; the Ego awakes and surveying its states is said to be sensitive; this mere awareness when concentrated upon a single object becomes perception, the last supreme effort is that of reflection when, no longer dependent on external stimulation, the self dwells within itself and contemplates its own pure reality.

From this point Biran's ideas cease to interest the psychologist. For the historian they have some significance as indicating the continual reversion which generation after generation makes to some well-defined type. For Biran the type was the Alexandrian Platonism. He objects to the view of the atomists that nothing acts on itself; he thinks the soul does act on itself, and that act is reflection; he thinks mathematics and metaphysics are very much alike, for in both the thinker depends upon reflection, which is not to be confused with abstraction; he tells us that "a philosopher of the Alexandrian school" defined memory not as "keeper of images" but as a faculty which can produce from concepts a proposition. What the use of this definition may be we are not told; it is admitted to be arbitrary and inaccurate, but it does *emphasize activity*.[1] Into this idea of activity everything finally enters; out of it nothing returns. The spiritualism which could be developed from Cartesianism through Malebranche, began to come under the sway of theology. The origin of language was again referred by de Bonald to a special revelation; Augustine's phrase, *Deum et animam scire cupio*, was reflected in the titles of works, *De la Connaissance de Soi-même*. The revival of religious enthusiasm checked the spread of scientific inquiry, and Biran, always susceptible to influences, went on from introspective psychology to mysticism. In the Middle Ages the mystical tendencies had helped to create psychology. In the nineteenth century they were no longer helpful and served only to confound the issues.

Biran died in 1824. His voluntarism had run to seed, but not without bearing fruit. The introspective point of view was reaffirmed, but not rightly used. An analysis of will was demanded to supplement Condillac's work on the senses and the intellect; but none was supplied. Cousin treated philosophy diplomatically and aimed at conciliating the theological party. Gratry (1852) attracted some attention by his theory that the infinitesimal calculus was a bridge from the finiteness of man to the infinity of God, and made his psychological analysis a faithful copy of the doctrine of the Trinity.

Jouffroy (died 1842) represented the mediating position which was limited to the declaration that psychology is the science of the self and of self-knowledge. Under his influence Garnier produced a *Traité des Facultés de l'Âme*, which reached a second edition in 1865 and was henceforth regarded as the catechism of this school and its most complete condemnation.

The course of thought during this period was the chief reason why Biran's work fell into disrepute. As Cabanis had been pushed aside because of his "materialism," so Biran was shunned because of his "spiritualism." In Renan, Littré and Taine aspects of Positivism were developed and accepted as a relief from obscurantism. Biran suffered unfairly, though his last writings were not calculated to inspire confidence in his psychology. His central doctrine of will was valuable, details of his work deserved to be remembered, he has been described as "perhaps the earliest accurate introspective observer of dreaming," on account of his statement that active attention is suspended in the dream-state; he also noted that sensation and perception vary inversely, though Hamilton did not admit that Biran anticipated his discovery of this phenomenon In details of this kind Biran retained a scientific interest, which was derived from the earlier period and gradually ceased to be effective.

Antoine Cournot (1807–77) was the author of two works which deal with the scope and method of psychology (*Essai sur les Fondements de nos Connaissances*, 1851; *Matérialisme, Vitalisme, Rationalisme*, 1875) Cournot regarded vitalism as the true basis of philosophic construction. He was consequently opposed to mechanism and to spiritualism, finding in the sphere of life the manifestation of an unique principle and the demand for a specific method. As life is manifested in a continuous scale of forms, there is no gulf between physiology and psychology: in general agreement with Bichat, Cournot would treat psychology as a natural science and make it a phase of biology. The mark of living organisms is spontaneity, and the spontaneity of mental action is not different in kind from the general spontaneity called life. The vital and the psychic syntheses therefore represent an activity which is neither mechanical nor derivative: in this sense "innate ideas" may be affirmed as the basis of all individual characters, whether types of body or types of mind. Cournot defends the conception of animal psychology, emphasizing the power of unconscious tendencies and natural instincts, with a process of development through sensibility to a higher consciousness which approximates to a sense of personality. Similarly in man there is a continuous development from the lowest degree, irritability, to the highest level of intellect. Human psychology must be a science of a species or genus, and so must be finally a psychology of human society In all this Cournot certainly anticipates the later work of men like Bergson and Wundt

The nature of a transitional era is well illustrated by the work of Cournot. He grasps the significance of scientific method in psychology, he is obviously in sympathy with the standpoint of Cabanis and Bichat, without being persuaded to reduce mental to physical processes On the other hand, the conception of a "rational psychology" retains what Biran and others had laboured to establish in the name of spiritualism For the continuity of life, which is Cournot's fundamental hypothesis, allows him to proceed from sensation to intellect without either degrading the former or exalting the latter the soul as substance is never invoked to support either higher or lower faculties, but sense and intellect alike are functions and as such simply forms of vital activity.

§ 6. After their reception of the Scottish philosophy the French school became eclectic and vaguely spiritualistic. The pure Associationism which consistently regarded the mind as a combination, had been decidedly upset by the followers of Reid, who developed their master's activism into something more adequate than the original "common-sense" doctrine. The Scottish succession now becomes a chronological sequence; the inheritance of doctrines becomes uncertain and new influences both from France and from Germany become apparent.,

J. S. Mill, in the introduction to James Mill's *Analysis*, remarked that Brown was not a true successor of Hartley;

his work must be regarded as an original effort in a similar direction. This judgment was only partially true. Brown was not a follower of Hartley unable to grasp the principles of his own school On the contrary, he was an intelligent opponent of Hartley's teaching, a follower of Dugald Stewart, and at the same time anxious to utilize the good parts of Associationism. Brown gives the reader a feeling of insecurity; he is patently over-developed and alive to more possibilities than he can hold in his grasp Erasmus Darwin attracted him in one direction, the French Ideology drew him the opposite way; he found a temporary resting-place between these extremes and died before his powers were ripe (1820) The key-word of Brown's psychology is "suggestion" Rejecting Hume and Hartley, Brown begins with the idea of consciousness as expounded in Reid and Stewart. To this dogmatic basis is added a doctrine of association, not as a principle of cohesion among ideas but as a mode of activity Suggestion is said to be either simple or relative Simple suggestion operates in the production of complete ideas, as e g in the thought of a friend when the sound of his voice is heard and suggestion adds the elements of his appearance Relative suggestion is different from this, it explains the power of the mind to supply non-sensuous data, e g the right-angled triangle suggests the proportion between the square of the hypotenuse and the squares of the other sides. By this distinction Brown tries to achieve two things. The general principle of association seems to him valid, in so far as it expresses the tendency of some ideas to recall others But Associationism as a doctrine seemed to err in reducing judgment to the level of sensation and ignoring any synthetic power over and above the separate ideas. Pure Associationism survives in Brown's "simple suggestion." The addition of the other "faculty" of relative suggestion places Brown outside the limits of Associationism

Sir William Hamilton was one of the candidates for the chair of Moral Philosophy in Edinburgh when Brown died. He was not elected, and only succeeded, sixteen years later (1836), in obtaining the chair of Logic and Metaphysics at that university. This chair he held till his death in 1856.

Hamilton's whole life was devoted to the acquisition of knowledge. Medicine, law, classics and philosophy were the subjects to which he gave most attention, and his writings show an extraordinary erudition in all these branches of learning. At sixteen Hamilton was attending lectures in Moral Philosophy at Glasgow, learning the ideas of Condillac and de Tracy From Glasgow he went to Edinburgh, from Edinburgh to Oxford, and apparently survived all these experiences with no definite acquisition of dogmas. Hamilton was destined to develop through his own exertions; literary research was with him a passion; from 1829 to 1836 the *Edinburgh Review* furnished a means of expression, and from 1836 the duty of lecturing assisted to concentrate his powers.

Hamilton was a philosopher rather than a psychologist, and we may be excused from discussing his work in more than one aspect. It was as a literary phenomenon that Hamilton really made his mark; his learning was encyclopædic, and he alone at that time could round off a subject by adequate reference to ancient, mediæval and modern continental writers

Hamilton brought into Scotch philosophy a new conception of Greek and a still newer conception of German ideas. With Hamilton, Kant begins to affect British philosophy, and this influence reinforces the tendency to move from analysis to synthesis. From this point onward it becomes impossible to stay at the level of Hartley's work; for better or for worse the significance of activity, of the Ego, of the noumenal has to be reckoned with. The stronghold of Associationism was attacked by Hamilton when he proposed to explain the recall of ideas by a "total redintegration" In place of the link between ideas hitherto regarded as essential to all reproduction, Hamilton proposes to view each idea as a phase (not a part) of mental activity, and explains the view by the term "redintegration." Since for Hamilton physiological explanations of memory were merely nonsense and the whole subject was part of the "metaphysics" of the soul, not much can be expected from this development. Hamilton saw no difficulty in memory; his difficulty was to explain forgetting, and that difficulty he never overcame.

During his lifetime Hamilton exercised an autocratic sway over the British philosophers. The erudition of his works gave them a position of authority almost sacrosanct in character. Yet the work was singularly sterile. A curious entanglement in the philosophy of the unconditioned prevented Hamilton from progressing toward that union of physical and metaphysical ideas for which he was so well equipped. Instead of that progress Hamilton rejected the help of physiology and relied upon the dubious factor of "mental latency." This was not a "subconscious" factor but a real unconscious consciousness, which was neither good psychology nor sound metaphysics It appears to have been a confused mixture of Hartley's "minimal vibrations" and Leibniz's *petites perceptions*. In this and many other points Hamilton fused and confused radically different lines of thought, he also created a terminology that would have made Hume regret his nationality still more!

The influence of Hamilton is seen most clearly in the work of Mansel Hardly anyone in the twentieth century would quote Mansel as a psychologist The times have changed and the change has been faithfully recorded in that monument of British learning, the *Encyclopædia Britannica* For the eighth edition Henry Longueville Mansel, B D., was assigned the task of writing the article on Metaphysics, and the article reprinted as a book arrived at its fourth edition in 1883 Mansel was a great scholar, acquainted with all the important writers from Aristotle to Hegel. His defects were not personal, they were the excellences of his generation. The article is mentioned here to give a measure for comparison Its inclusion of Psychology along with Ontology in the general sphere of Metaphysics; its superficial treatment of the senses, its insistence on intuitions, especially moral intuitions, its declaration that the body with its organs, however necessary to certain modes of consciousness, "is not, in any sense of the term, myself"—these and many other similar turns of expression stamp the article with the characters of the old school. As an accurate statement of theories then in vogue it merits all respect. If anyone will take the trouble to read Mansel's article and then turn to the article "Psychology" in the eleventh edition of the *Encyclopædia*, significantly separated from Metaphysics and given an independent status, he will discover why Mansel's work is no longer quoted as standard psychology.

§ 7. The idealistic trend faintly perceptible in Thomas Brown and more obvious in Hamilton was a divergence from the path marked out by Hume and Hartley. With the philosophical problem we are not here concerned, and it is therefore not necessary to decide how far Hamilton's theory of perception was a form of idealism or a species of natural realism. The point relevant to psychology is the question whether the synthetic activity of the Ego or the associative power of ideas (as elements of consciousness) is to be emphasized. The latter was the original attitude of Hartley, and to it James Mill remained true. Born in 1773, Mill absorbed in his youth the ideas of Hume and Hartley, became acquainted with the teaching of Reid and Brown, but remained unaffected by German thought till his death (1836) He entitled his work *Analysis of the Phenomena of the Human Mind* (1829), and to that title the whole work faithfully corresponded.

James Mill is the supreme exponent of Associationism. Unlike its founder, Hartley, he was not a physician but a historian, a politician and something of a doctrinaire. His work is a reflex of his character. Mill dispenses with all that he considers irrelevant; he opens abruptly, proceeds curtly and shrinks from excessive illustration. The heading of the first chapter is a quotation from Locke—"I shall not at present meddle with the physical consideration of the mind." Physiology is left unmentioned, and the subject begins with the elements that are "most simple," namely, the feelings we have through the external senses.

The senses enumerated are first the usual five senses, then the muscular sensibilities and those which have their place in the alimentary canal. The order of the senses is regarded by Mill as unimportant; the account given of each sense is perfunctory, but special mention may be made of the fact that Mill includes "sensations of disorganization," from external and internal causes. The muscular sense "has been miserably overlooked," except by Hartley, Darwin (Erasmus) and Brown; it is specially important because without it we could not have the idea of resistance.

From sensations Mills passes to ideas, which he regards as the remainder left when the object causing a sensation is removed. "We have two classes of feelings, one which exists when the object of sense is present, another which exists after the object of sense has ceased to be present." Ideas are explicitly said to be *feelings*; thus Mill goes from sensation to what he calls "ideation" with no suggestion of any activity. This is the characteristic of a pure Associationism, and Mill is the last writer who follows its course without trepidation. Among other difficulties this method involves ignoring such residues of sensation as after-images; there is no real distinction made between after-images and ideas. Again, the presence of different sensations is made to account for discrimination, the difference is made to account for discrimination, whereas it must to some degree depend upon discrimination.

From ideas we pass to sequences of ideas, and the first question is whether ideas "occur casually and irregularly, or according to a certain order." The latter is obviously the case, and the two kinds of order named are the "synchronous" and the "successive." This is quite inadequate, but it satisfies Mill, he thinks the sequence of ideas reproduces the sequence of sensations; if we add vividness and frequency to explain the strength of association, the whole theory may be considered complete.

The principle thus established is next used to explain several other phenomena. Facility, e.g. in addition, is a case of rapid association due to practice. Complex ideas are cases of coalescence, the separate ideas having been so often conjoined that they run into one another. "It is to this great law of association that we trace the formation of our ideas of what we call external objects." Further, "some ideas are by frequency and strength of association so closely combined that they cannot be separated," e.g. colour and extension, solidity and figure. The "acquired perceptions of sight" are quoted as another example; colour alone is given by the eye, extension and distance are derived from sensations in the muscles and associated with the sensations of colour.

Some associations are to be called "indissolvable"—though, of course, Mill means by the phrase that some ideas are inseparably associated, and, conversely, some ideas cannot be united This psychological incapacity would be very interesting if it were proved to exist; it was a myth of Thomas Brown, who was too apt to confuse logic and psychology. Mill makes better use of Stewart, from whom we may assume he derived the idea of unremembered suggestions (chap. iii), a further point made is the interaction through association of organic and mental states. "Anxiety in most people disorders the digestion It is no wonder that the internal feelings which accompany indigestion should excite the ideas which prevail in a state of anxiety" This is of interest, and in part at least it is true. But as the editor (J S. Mill) remarks, on this theory only those would suffer from depression who had *previously* had indigestion. In mitigation of this criticism we might say that Mill was not thinking so much of actual depression as of the particular ideas in the mind of the depressed person. Mill thinks there is an association between feeling in general and certain specific ideas, this is a valuable point, though very obscure and treated too briefly It would be interesting to know whether individuals ever had ideas or groups of ideas that regularly predominated during states of physical weakness or of localized pain such as headache. Our author has not attempted to satisfy curiosity on this point.

Mill's account of the Laws of Association is vitiated by one great defect He speaks of ideas without noticing that they are capable of being elements in many different sequences; the reader is left with the impression that every idea belongs to a definite place in a definite series. This was a natural mistake for a rigid Associationist to commit, but it was not excusable after the way in which Brown had resolved associations into a general possibility of suggestion.

Under the head of "Naming," Mill pushes his psychology a step further. We have heard about sensations, ideas, complex ideas and trains of ideas. A name is not an object that acts on the speaker's mind; it is a device by which the speaker acts on another mind. The desire of communication may be satisfied by pointing, or by picture-language; but the end is most easily achieved by having a single mark for a group of sensations and associating the idea of that mark with the idea of the group of sensations (i.e. the complex idea of the thing). The method of the Associationists thus seems to stand the test of the transition from things to language.

In addition to names for things (clusters of sensations) we may have names for clusters of copies of sensations; these are the names of imaginary objects or "all that class of ideas which Mr. Locke has called mixed modes" These may be called Mental Ideas, as distinct from copies of external objects called Sensible Ideas. Mental Ideas are "arbitrary," such as ideas of "a mountain of gold, of comfort, of meanness" By thus quoting his examples, Mill passes imperceptibly from imaginary groups of sensible ideas to abstract ideas and, finally, to class ideas. By this disputable process Mill keeps the reader in one plane; language is a system of marks for groups of sensations or copies of sensations; general names are therefore marks of this kind Before dealing with that subject some other points require elucidation

A source of some contents of the mind might be looked for in consciousness To obstruct this line of thought Mill declares (against Reid) that consciousness is nothing distinct from feelings or ideas "To say I am conscious of a feeling is merely to say I feel it" In other words, behind the given state there is no consciousness to which the state belongs; the state is the consciousness, and therefore it is the Ego. This is Mill's last word to intuitionism and to those idealists who make the ideas belong to a Self that transcends them; it is Hume's position restated. Consciousness is a "generical name"; so is "conception"; a group of ideas called "horse" is the same as the concept of horse, and consciousness is the generic name for the whole sum of concepts. Consistently with this position, Mill makes Reflection a class name; it is "the notice which the mind takes of its operations," and as having an idea, being conscious of an idea, and noticing an idea are all names for the same thing, reflection is another word for consciousness. Thus, after the intuitionists, the apperceptionists are disposed of; and Mill ignores all the arguments for unnoticed affections, even those commented on by Hartley.

When Mill comes to the question of classification, his psychology reveals its true polemical character Plato, Aristotle, Mr Harris and Cudworth are included in one sweeping condemnation There is no "idea" above and beyond things, there are no "real kinds", abstraction is not a process of getting to the essence by omitting the unessential, men have been "led to class solely for the purpose of economizing in the use of names" This is the reason why we make one name serve for many individuals, the general name is a mark of innumerable individuals. It is obvious that Mill's theory is beginning to get out of its depth at this point The situation is worse in the succeeding chapters on Memory and Belief, for the author is in sore need of some degree of activity in order to explain these data, and activity he nowhere admits

Mill sees no alternative between calling Memory a "faculty" and reducing it to a complex of ideas He commits himself to the latter proceeding, and does it as follows He states first that we could not exist if we had only sensations, or ideas unconnected with sensations, or such series of ideas as constitute imagination For then each separate state would be our whole being, and we could not have knowledge. So far Mill agrees with Plato and all other supporters of continuity We must be able to unite the present with the past How is this achieved? When I have the idea of an action, I recognize it as an action formerly done by me, I recall by association its accompaniments, I anticipate similar results · this is what is called "experience." Nothing is remembered except through its idea; we have therefore to find the difference between ideas that are memories and ideas that are not. Association is essential to memory, it is the sole means of purposive recollection; but these facts relate to the means of remembering, not to the nature of memory. This the author explains as equivalent to the idea of an object, together with the idea of my own former experience. This last point is capable of further analysis. A memory consists of "the idea of my present self, the remembering self, and the idea of my past self, the remembered self." In other words, an object A is associated with a past state B, which is linked by a series of intervening states to my present state B^1. This reminds one of Goldsmith's Traveller, who "dragged a lengthening chain." It assumes that we get back to an earlier state through "running over the intervening states of consciousness, called up by association." But these states are not states of myself unless the identity of the self during the time-interval is admitted. Also, as J. S. Mill notes, nothing is here said about belief, which seems to accompany an idea called a memory. James Mill rightly says, "It is not easy to treat of memory, belief and judgment separately"; but here, as before, he neglects order in his treatment and so makes the whole procedure obscure. Belief in a sensation, says Mill, is another name for having the sensation; that is, belief in a present state is simply a present state. Belief in the past is memory, as analysed above. Belief in the future is the association of an idea with other ideas as its consequences, given an antecedent, we anticipate the (future) results, and so have a belief in a projected idea. Belief in that which is not perceived (e.g. the back of a picture) is a case of association; the same explanation applies to the general belief in *external* objects when we have only the *internal* sign (sensation). The other factor, Identity, is ultimately reduced to Memory. "The life of one man is one series" of ideas. "When I say, then, that a man is the same, I merely express my belief in one of these series." In the case of other men we have observation and memory; in the case of ourselves we have consciousness and memory. This settles the whole matter, if we add, as the author does, that "the memory of a state of consciousness and the memory of something observed are two distinct things."

Mill shirks no difficulties; he faces every test of his theory gallantly. He dislikes all mystery, and his sentiment in this respect is thoroughly healthy. He lacks nothing so far as concerns acuteness and, if he does not refute, he very nearly succeeds in silencing, his opponents. The possibility of analysing the self down to the ground in this way is the point of dispute among psychologists, Mill's commentators could not uphold the master, and their remarks show how uncompromising Mill remained to the end. It will be enough to remark at present that the treatment of memory, belief and identity involves a circle, that Mill fails to show how one series can be one when the point in dispute is whether the parts make the series, or the recognition of the series fixes the parts; that finally this applies particularly to the case of personal identity where we require to determine psychologically whether a past event does or does not belong to the particular series called my "self" Mill does nothing ultimately to prevent my "self" being purely objective to me, my identity is for me what it is for anyone else, so far as Mill goes But this cannot be accepted without demur The situation is much the same when Mill comes to the questions of attention and will He creates a circular definition first, sensations are either indifferent or interesting, we only attend to the latter; therefore to attend and to have an interesting sensation are one and the same thing. Similarly we only will to do what we want to do; we only want to do what is associated with pleasure and with the actions which formerly produced pleasure In both cases the operation of the simple factors gives the whole explanation But it is open to the opponent to ask whether a sensation is interesting to the senses, or to the person; whether the quality of being interesting belongs to sensations thus considered; and, if not, whether the explanation explains anything.

Into Mill's other discussions, of logical processes and of moral sentiments, we shall not penetrate at present They are for him more important than the analysis, the real aim of this empirical groundwork was to eliminate "entities." This was done very thoroughly, whether too thoroughly remains to be seen.

CHAPTER II

THE TRANSITION IN GERMANY

§ 1. KANT'S immediate successors did not concern themselves with psychology The keynote of speculative idealism was struck by J G. Fichte, when he insisted that the starting-point of all thought was that act of the soul which creates the distinction of subject and object. The results of this beginning do not belong to the sphere of psychology, except where they became regulative principles for later thinkers In this respect they have considerable historical importance, and Fichte exercised a subtle influence over a great part of the philosophical thought of the nineteenth century The voluntarism latent in Fichte's work becomes, through Schopenhauer and the biologists, one of the main currents of psychological theory[1]

Fichte's interests were primarily ethical. The fervour of his genius made his work a lasting inspiration, and the central feature of that work was the concept of activity By starting from a fundamental activity, Fichte avoids all the problems of sensationalism and of rationalism. That immanence which Kant ascribed to the moral life of the individual was by Fichte extended to the whole field of conscious existence , questions concerning the action of the object on the subject or of the subject on the object were all anticipated and answered by the preliminary assertion that the distinction of subject and object arises out of the primary act of the spirit. How this assertion could have assisted anyone anxious to learn the detail of psychology we do not know. Its author made no attempt to follow that laborious path, but preferred to write a history of consciousness in a very different sense. The inner movement which began from that first act is traced through a series of developments which is mainly an evolution of concepts from a narrower to a wider universality.

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[1] Conversely, in Münsterberg's work the influence of Fichte supports the idea of life as that which the science of psychology never reaches.

While this diverges from any recognizable type of psychology, it has the persistent quality of immanence, it is pre-eminently a treatment of experience as the ground of all explanation, and it served accordingly to set the seal upon Kant's declaration that materialism and spiritualism were alike obsolete As a science of reflection Fichte's treatment of *The Facts of Consciousness* suffered from the limitations it assumed; there was no provision for new material and no sufficient appreciation of the fact that reflective thought presupposes the activities which accumulate the material As time progressed this fault turned the scale so far that materialism was once more in the ascendant. Meanwhile Schelling extended the scope of reflection without improving the general situation To the science of consciousness he added a science of what preceded consciousness and brought into vogue the Unconscious. This, too, was a movement that acquired peculiar significance later, but the Unconscious in Schelling's system is a stage in cosmic evolution, and therefore bears only a distant resemblance to the "unconscious phenomena" of the later psychologists With this premature attempt to think in terms of the Universe we are carried back to the uncritical synthesis of the later Neoplatonists It is true that Schelling incorporated into his system all the wealth of all the sciences, but nothing was gained by that, with the exception of one point. The individualism of the seventeenth and eighteenth century was given a healthy chastisement by this idealistic absolutism The unity of all things could not be made a basis for deduction of facts, but it was needed as a regulative hypothesis. From Schelling proceeded the ill-famed *Naturphilosophie*, whose head and front was Oken The wonders of magnetism were a continual snare and delusion, leading to interminable arrangements of all things according to their "polarity" Psychology disappeared in a haze of psychosophy, accompanied by biosophy.[1] Yet in spite of all the excesses, something was achieved. The sharp lines of demarcation that had been drawn across the field of science were blurred; if distinctions were to be made in the unity of Being, they must be new ones.

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[1] E.g. Troxler, *Elemente der Biosophie* (1806).

The final stage of this movement, as we have it in Hegel, passes altogether beyond the sphere of psychology, but in one respect belongs to its history. The old antithesis of inner and outer which more or less explicitly guided the psychology of the eighteenth century, was discarded by Hegel. This prepared the way for a new understanding of the social consciousness, and in this sphere the influence of Hegel has been permanent. Making all required allowances for changes of thought and expression, it can still be asserted that the "objective mind" of Hegel's system is the true antecedent of all theories which pass beyond the individualism of earlier schools and see in the mind a reality which is not separated from other minds as one body is separated from another.

Among those who wrote on psychology during this period, C. G. Carus deserves remembrance. As a theorist he shared the general tendency toward a large indefiniteness. Consciousness arises out of an antecedent unconsciousness, which is a state of rest; sleep is the return to this unconsciousness from which the soul draws new strength. The life of the soul is a perpetual stream which is illuminated by consciousness only in a small part. All organic life has some degree of consciousness, so that there is reason for the comparative study of the forms of consciousness. Carus earned a place in history as one of the earliest writers on comparative psychology. This development of his pantheistic thought was presumably due to the fact that, being a physician and professor of medicine, Carus was drawn toward the study of the organism and regulated his imagination by the pursuit of physiology and anatomy. But these feebler efforts had already been surpassed by the greater work of Herbart.[1]

§ 2. The movement toward pure subjectivism, most definitely forwarded by Fichte, produced a reaction in the psychic anthropology of Fries. Disgusted with Fichte, Fries determined to begin again from the Kantian basis and construct a system free from the vapid illusions of the earlier post-Kantian development This determination is expressed in the method and the language of Fries; for psychology is declared to be the ground of all speculation, and the term "anthropology" is employed to make clear the empirical character of the whole undertaking. Needless to say, empirical does not mean experimental, and in its essential features the psychic anthropology of Fries is a new critique of the understanding and a specimen of the analytic psychology inaugurated by Kant Avoiding the transcendence which he regarded as the chief defect of the post-Kantian development, Fries divides the subject-matter of speculative thought into philosophic and psychic anthropology Physical anthropology or human physiology is not a part of philosophy, logic and metaphysics belong to the highest sphere, to which one can only approach by way of psychic anthropology This discipline is therefore the true foundation for a study of reason, both as pure and as practical reason So far the scheme is essentially Kantian, and the interest of this psychic anthropology centres around the details in which Fries disagrees with Kant, and aims to correct the psychological foundations of the *Critique of Pure Reason*

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[1] G. H. von Schubert, *Geschichte der Seele* (1833) is another example of the psychology produced by Schelling's school. It was insignificant.

The point from which observation must begin is that of action, we observe activities, and faculties are the (relatively) permanent tendencies to action. These tendencies may be classed as connate (e g the tendency to know) or as acquired (e g the capacity to write). Since the activity is all that we can observe at a given time, the content of consciousness is never equivalent to the sum total of its possibilities; there is more in consciousness than can be immediately known at any one time We shall return to this point, at present it is necessary to decide the question of the faculties. Fries sides with Kant against the reduction of all inner states to forms of knowing, but he objects to the distinction of thought, feeling and desire as it was made by Kant. Feeling is regarded by Fries as a complex state of pleasure or pain and anticipation, so that feeling and desire (or aversion) are inseparable. All that is left is the active power itself, and the capacities or faculties are enumerated as knowledge, inner disposition (Gemüth) and activity.

These three faculties are treated by Fries as aspects of the entire life of consciousness, they are not to be regarded as actually separable, but as co-operating in every activity of the living being The activities themselves appear in different planes of development, namely sense, habit and understanding. To obtain a complete analysis of the idea of consciousness these two sets of terms must be combined and the faculties be considered as fundamental *forms* of consciousness discoverable in co-operation upon each of the *planes* or *levels* of conscious life.

The doctrine of faculties is now combined with the idea of the unity of consciousness, and Fries proceeds to define the meaning of consciousness as an activity He rejects the distinction between activity and passivity, declaring that every capacity is primarily a power of action But this activity is never known as such out of relation to some stimulus The spontaneity of the Ego is therefore not the same thing as an immanent activity of the soul. With Kant, Fries declines to introduce the idea of a substantial soul into his description of consciousness at the same time he declines to follow Fichte's method of giving the Ego an independent power of action. The spontaneity which he recognizes is relative to a given stimulus spontaneity and receptivity are correlative terms, for the spontaneity always has a definite and particular character, implying receptivity, while receptivity is not passivity but the active process of taking up and assimilating the stimulus

These general principles are intended as an introduction to the life history of consciousness With the description of this process we enter upon discussions that properly belong to a theory of knowledge and therefore do not concern us. Fries treats the subject of sensation as though it involved nothing but the qualitative differences in experience In the case of outer sensations the externality of the object is an immediate datum, a quality of the intuition itself. Inner sensation is the capacity of being determined by stimuli from within, as, for example, the power of perceiving the feelings of pleasure and pain as they arise Over and above perception there is the consciousness that we are conscious in other words, apperception These and other points are reproduced from earlier writers, and we may pass over them to indicate some significant criticisms of the Kantian psychology

Consciousness is regarded by Fries as having distinctions of degree. It is possible to perceive immediately our own inner states and yet not be conscious that we do perceive them, so that a distinction is made between "having" a presentation and "being conscious" of that presentation This doctrine goes back to the Leibnizian distinction of perception from apperception it was found in Kant as a distinction between obscure and clear ideas. But Fries modifies it and restates it as a difference between consciousness as a whole and a central illuminated portion The inner perception has its "horizon" its light extends to a certain distance, varying in intensity as the horizon recedes, the light becomes more diffused and the distinctions within its compass less sharp The question then arises—What causes the presentation to enter this luminous centre of consciousness The answer is given in terms of the impression and the consciousness the susceptibility of the inner sense and the activity of the mental powers meet in all states of full consciousness the most vivid or lively ideas emerge from the background into clear consciousness

The doctrine of memory which this implies, namely that all ideas are always present but not always active, deserves to be noticed Since ideas persist unless checked, Fries has to explain forgetting rather than remembering An idea or presentation, if not renewed, loses its strength for the Ego has a limited amount of power, and continues to expend it on new presentations. By association, if one idea becomes strong it may assist another to rise · or the inner sense becoming more acute may cause a latent idea to reappear These are the two methods by which ideas are made to regain their lost activity. In general principles this is the doctrine of Herbart, but it differs from the Herbartian position in one respect · it emphasizes activity rather than passivity and makes the presentation return when strengthened, whereas in Herbart the return depends only on the fact that an antagonist is arrested.

The distinction which Fries makes between presentation and consciousness of presentation seems to be in reality an unfortunate survival, showing the degree to which Fries remained a victim of tradition. The idea of the horizon might have been useful if the argument had not started badly by regarding the "dark" part of consciousness as occupied by ideas A distinction between *ideas* in consciousness and out of consciousness is impossible. Here Fries is a slave to the notion of self-consciousness. When he comes to the definition of self-consciousness he limits it to an immediate and indefinite feeling of self. This defines itself through reflection, which is mediate so that there is no immediate consciousness of self (as meant by Descartes). This, then, amounts to an elaboration of the original Leibnizian definition of apperception . for the consciousness which Leibniz called apperception is here identified with perception, and a yet higher degree is recognized in the emergence of self-consciousness. To put the same thing in another way, Kant's "apperception" is here taken as a real psychological process the "I think" which in Kant might be an "obscure idea" is here called a feeling of self, and the pure apperception emerges from that as the highest unity of consciousness.

The obscurity of these distinctions is somewhat dispelled if we consider the outcome The object at which Fries aims is to remove the distinction maintained by Kant between the self and knowledge of the self. Kant maintains that the known is always phenomenal, and that self-knowledge is really no more than a knowledge of the phenomena of consciousness. The value of the reconstruction offered by Fries lies in the fact that he makes it possible to say that the activity of thought and its knowledge are ultimately identical. The inner dualism by which Kant was haunted is thus declared psychologically nonexistent we may not at any one time comprehend in our thought all the contents of our consciousness, but what we do not so comprehend is not external to consciousness.

The simple fact is that reflection produces an appearance of dualism where it does not exist. Fries thus makes an advance toward the position which defines the Ego as consciousness, not as the bearer of a (phenomenal) consciousness.

§ 3 The tendency of the post-Kantian psychologists to begin by transcending the Kantian limitations is shown once more in Herbart. Just as Fries adopted the general Kantian position with the intention of making the connection between the Self and its phenomena more explicit, so Herbart believes that it is possible to make metaphysics the basis of psychology. The influence of Kant is seen in Herbart's view that experience is the source of true knowledge, but experience is taken in a sense wide enough to include certain implied conditions Of these the chief are persistence and unity, experience implies a unifying agency and indestructible elements In this way Herbart becomes dogmatic in his teaching about the permanent which underlies phenomena and about the ultimate nature of the elements in consciousness This position was unfortunate. Herbart agrees with Fries in tending toward anthropology; his interest develops along the lines of psychology, and the metaphysical presuppositions ultimately become superfluous.

Analysis, the method of science, requires plurality The unity must therefore be equivalent to synthesis, not a "pure unity," but that complex unity which coexists with a plurality of parts, an organic unity The analytic method is accepted by Herbart This method gives us first the elementary psychic activities, then there is that complex unity of activities which we call "self"; finally there is the bearer of the activities, the Soul as the underlying "Real."

A great many errors might be expected to enter in with this notion of the soul But Herbart actually avoids them all While insisting that metaphysically we must retain the soul in order to explain the possibility of unity and the origin of the first activity, Herbart explicitly affirms that "the simple nature of the soul is wholly unknown, it is an object neither of speculative nor of empirical psychology" Since the Ego is known as a system of activities, psychology does not require to go beyond these activities. As a science it knows nothing but phenomena.

Though it is not easy to put oneself into the position which Herbart takes, it is ultimately worth the trouble. For Herbart's general knowledge of philosophy enabled him to grasp the whole significance of psychology as a natural science and as a philosophy of mind The tradition which he inherited spoke of psychic phenomena as phenomena or manifestations of the soul But why should there be phenomena? If the soul thinks of its own nature (as the Comtians said), why should it ever do more than think itself? Why should it not either be a subject thinking a subject, or simply lapse into nonentity? To this question there is really no answer, the problem is attacked in the wrong way and the way of science is blocked This result condemns the method, it is part of the work of science to find methods that will give results. If a beginning is made from the phenomena it is possible (Herbart thinks) to prove both the fact and the nature of the soul, this is the true metaphysic of psychology To begin from the soul is a false metaphysical process.

Though Herbart does not fully accept Kant's attitude toward psychology, he cannot be accused of backsliding. Kant had intended to remove the "soul" from the sphere of phenomena, but the gap between the phenomena and the unknown basis of the phenomena was filled in with faculties. Herbart pushed this process one step further, the faculties give place to a multitude of independent "ideas" or activities. In short, the soul is reaffirmed as an actual datum, its whole content is made equivalent to the sum of persisting ideas, and these ideas are treated as the primary irreducible elements of psychic life. It is not difficult to understand how such a theory should give occasion for offence and receive very different interpretations. Lotze's direct criticism is deserving of all respect; but it seems to be based on some error. Lotze says, "According to this psychology, if the soul was ever active at all, it never was active but once. It asserted itself against the stimuli which came from without, by producing the simple sensations; but from that point it became passive, and allows its internal states to dominate its whole life without interference." Here Lotze speaks as a supporter of another kind of psychology, he misses in Herbart "the eye which perceives the relations obtaining between the single ideas." Herbart is not proposing to treat psychology in that way. Taking the natural sciences as his guide, he aims to reduce consciousness to simple elements and their combinations; it is of the statics and dynamics of the mind that he speaks, and ultimately comes to the idea of a mathematical psychology which can dispense with the idea of the soul On the other hand, it is clear that Herbart did not consider that he was dropping that idea On the contrary, his whole theory of psychology depends on the doctrine that every single element is an activity of the soul. This is especially obvious in his view of ideas or presentations which are not transmitted from outside into the mind, but are reactions of the original underived agent Lotze seems to miss this vital point in not seeing that Herbart's "soul" is never the place in which events happen, but the actual agent partially manifested in each distinguishable activity. If this were not so, the idea that there is a constant tendency towards equilibrium could never have been elaborated by Herbart as it was

The result is actually that psychology becomes empirical. The extent of this empiricism must be considered with some care, for at the time when Herbart wrote, "empirical" might mean either that the psychic events were alone to be considered (as in English Associationism) or that psychology could be treated as a natural science Herbart's position is midway between both these views. The postulate of the soul makes this psychology an applied metaphysic, and Herbart explicitly denies that it is possible to treat psychology experimentally. On the other hand, he thinks that psychology can be made an exact science, and to show this he invented his own peculiar mathematical formulæ No attempt will be made to follow that line of development, it was unique, and found no subsequent supporters. For it was not in principle the same as the later mathematical expression of ratios and differences which is exemplified in the Weber-Fechner law, though undoubtedly much encouragement for that later method was derived from this striving after exactness and scientific expression

Phenomena are in perpetual flux in other words, the most obvious thing about consciousness is its perpetual tendency to change: even though we try to retain one presentation, it slowly dwindles in our grasp. This general fact gives Herbart his starting-point. By an idea we mean the outstanding point, the summit or peak, on the surface of an ever-heaving consciousness If we imagine a light shining on a sea of rising and falling waves, the analogy may assist us to grasp Herbart's conception of "arches" and "summits" Every single idea travels, as it were, on the path of a semicircle, from a point below the level of consciousness upward to its zenith; it then goes down again and gives place to another This process continually goes on, it is the business of psychology to find its laws.

Returning to the question stated above, we look first for the starting-point of the whole process The only active quality ascribed to the soul is the tendency to preserve itself The separate activities are special cases of this general tendency to self-preservation. Our experience is constituted by an objective disturbance and a subjective reaction The position is therefore realistic in so far as a real objective element is assumed, but idealistic in making the whole content of the resulting state of mind consist in a particular kind of inner activity Herbart has taken from the English psychologists the doctrine that there are no innate ideas, from the same source he derives the idea that the variety of the inner states is directly due to the variety of external conditions, but he diverges from them in making the unity of the soul his ultimate basis and so avoiding the necessity of finding some bond for (atomic) ideas

Having attained both unity and plurality (two essential categories for all thinkers at that time), Herbart proceeds to develop the laws of mental action. A certain amount of energy is expended in every act of self-preservation. It is this energy that carries the presentation up to the summit; that is to say, makes it a conscious presentation. If a second disturbance follows, the total amount of energy is divided; what the second gains the first loses, and therefore as the second rises into consciousness the first dies away. This principle, applied to the whole diversity of mind, explains its perpetual movement and its perpetual self-preservation. No presentation ever disappears completely; it only becomes infinitesimal in respect of its energy, which is equivalent to becoming a negligible factor until some access of energy raises it again into consciousness.

We must deal leniently with this doctrine. Its value is great, if we regard it as an attempt to give an intelligible description of facts In detail it has many defects. Herbart constructed mathematical formulæ to explain the rising and falling of presentations He seems to have thought in these terms, or in terms of architecture (arch, summit) where others would more easily think in different forms. But all are metaphors alike, whether they are terms of mathematics or of "waves" or "streams" In spite of a vigorous beginning, the formulæ soon dropped behind the requirements, and this phase of almost Pythagorean number-worship was in the end neither a help nor a hindrance The most interesting point to notice is that the number-theory is here used to reduce differences of quality to quantitative measurements. The reason why one presentation is ousted by another is their incompatibility, their difference in meaning. But while every idea must have both content and activity, there is no sure basis for the conversion of degrees of difference into degrees of activity.[1] The peculiarity of Herbart's doctrine consists in this very conversion, the logical opposition, as between affirmatives and negatives, is fused with the inner activity of preservation and put forward as an actual struggle It may be true that we experience a strain in thinking that an object is both long and short, but the strain is not a measure of the energy of "long" and "short" as ideas. In the sphere of sensation this or a similar law might hold good; in the sphere of ideas as such, without reference to emotional accompaniments, it is a rash assumption. For Herbart it is fundamental, as his terms continually show. In fact, every mental operation is described as twofold; every presentation is both a presented content and a presentative activity. When the contents conflict, the activities are opposed; this is the assumed relation and the point by which the whole system stands or falls Presentations are classified as similar, disparate and contrary Contrary presentations are (as activities) in conflict, they hinder one another, and one is said to be "arrested" by another [1] Similar presentations fuse, and so reinforce one another. Disparate presentations (e.g those of sight and touch) unite but do not fuse; they are said to be "complicated," and, as activities, they are co-operative

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[1] Lotze, *Metaphysik*, p. 269.

The whole state of the mind is determined at any given time by the degrees of activity belonging to each element or presentation Thus the elements *a*, *b*, *c*, *d*, . . , according to their respective qualities, will be either clear or obscure, and they will stand to one another in different relations which can be measured as degrees of distance from the point at which they become relatively negligible. This point of least activity is called the threshold of consciousness. Below the threshold the contents exist with no measurable activity; they are not annihilated, and they continue to affect the whole consciousness, they are not unconscious, but subconscious. Here a further distinction is introduced When the contents of the mind attain equilibrium there is a static condition, which would, presumably, continue if no fresh disturbances occurred But the objects of the outer world continually enter in, they continually disturb the equilibrium which tends to establish itself in consciousness, there is therefore a threshold for static conditions and another for dynamic conditions If a presentation has been through the process of conflict and succumbed, it is below the static threshold and as good as dead, if, on the other hand, its energy is unexhausted and its obscurity is due to not having asserted itself, it is describable as below the threshold in a different sense, it is below the dynamical threshold. This distinction of statical and dynamical thresholds amounts, therefore, really, to a difference of point of view; the descending presentations are exhausted, the ascending presentations have the strength of their youth unimpaired.

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[1] Hemmung Usually translated by the physiological term "inhibition."

From simple presentations we pass on to fused and complicated presentations. The principles are identical; the only difference is that, in experience, we must deal with masses of ideas, and consequently consider not merely the relation between a and b, but also between a and b and c, or $a + n$ and x. Collective presentations and total states now enter as factors, and the problem resolves itself into the relation of the Ego, as the totality of acquired mental contents, to each new element introduced This relation is one of reception or opposition The entrance of a new element constitutes a perception. If it is rejected it falls away; if it is received it is taken up into the existing totality and is said to be apperceived

The term apperception is the mark by which Herbart is known to most readers of psychological works It is also the most obvious sign of the general influence which Leibniz exerted over Herbart It denotes two processes, distinguished according as the apperceived element is derived from without or from within The process has the same character in both cases, a new element, relatively unstable, is taken up into an existing mass of presentations and thus incorporated in the permanent body of presentations. When the new element comes from without, the process begins with a sense-affection which is at first only an event *in* consciousness, apperception makes it a *part of* consciousness, because the sense-affection rouses into activity the pre-existing Ego as a complex of presentations with which the new element must fuse, or else perish Under some circumstances the process begins with the upward movement of what is normally weaker and therefore repressed; then an analogous reaction takes place on the part of the complex which is normally stronger, and a struggle ensues, ending in a new equilibrium. In sum, this is a doctrine of association, but the mere association of ideas as understood in the English school is qualified by the assertion of spontaneous ideas which represent an activity not recognized in the ordinary formula of Associationism.

It is obvious that in this description the term consciousness is used in two senses. In the wider sense it includes all psychic events; in the narrower application it denotes only what is actually known to be in consciousness. This dual use of the term is not an accident; it is an integral part of Herbart's system. Not every psychic event is noticed at the time of its occurrence; experience shows that some events remain latent until they get an opportunity of emerging into full consciousness. Also, there are at one time more factors in consciousness than can be comprehended in the scope of observation. From this follow several deductions. First, that some components of consciousness exist as a vague margin, like objects beyond the range of a light. Second, that apperceptive consciousness is equivalent to attention. Third, that the real meaning of "inner sense" is explained by the fact that apperception is to perception as perception is to its external condition; for the perception is external to the apperceiving mass, and the inner sense is thus provided with an object for its activity.

Other points follow logically from this position. We observe that people have interests, the musician notices discords, the scholar notices a false quantity, the nurse hears the sound in the sick room when others do not perceive it. In short, all perception owes its power to a relation between its quality and the quality of the individual's dominant complex of presentations. Attention, then, is reducible to the activity of the apperceiving masses; that is what is meant by the inner activity of the mind when it attends. Attention is here analysed into (*a*) the activity of existing mental states and (*b*) the fact that apperception increases and develops the content of the presentation thus reinforced. It is a characteristic of Herbart's whole method that the activity of the mind should be resolved into the complex interaction of the elements. This principle is applied to the problem of feeling, of desire and of volition. Pleasure and pain are concomitants of the struggle between presentations; when the combination of forces through which a presentation becomes established is in excess of the requirements, there is a feeling of pleasure; tension between presentations is a source of pain. In view of the earlier theories, which made feelings into confused intellection, it is necessary to notice that Herbart makes the clearness of the presentation quite independent of feelings. This is especially the case when the source of unpleasant feeling is below the threshold, when, for example, we clearly perceive a fact, but have a sense of dissatisfaction about it.

Desire and volition, not being distinct "faculties," are resolvable into the activities of presentations. When a presentation, though opposed, gradually attains predominance, with accompanying feelings, it constitutes the state of desire. If action is possible, desire becomes volition. Since the course of life tends to create permanent complexes of presentations which usually overcome all others, there is a tendency to establish desires which are similarly permanent; these we call "character" This is the climax in Herbart's system

In view of the numerous criticisms passed upon Herbart's doctrine of feeling, the interpretation implied in these statements may be in need of further explanation According to Herbart feelings are capable of being treated as one aspect of presentations This is usually regarded as one more example of the doctrines which make feeling dependent on knowing It is true that Herbart regards feeling as arising in the sphere of ideas But he is not actually taking sides in the time-honoured controversy on the primacy of intellect over will, or will over intellect He aims at a deeper unity. The idea is an activity, the soul is a unity that cannot be divided against itself, and resists the tendency to be divided between conflicting presentations Feeling is the concomitant of this activity, inseparable from it. Here Herbart reminds us strongly of Aristotle's formula, that pleasure accompanies unimpeded activity The emphasis on the ideas of organism and of habit recalls the same original, for Herbart does little more than develop the Socratic idea that true knowledge implies feeling, and feeling directly affects knowledge. This may not be applicable to all cases, but the principle is maintained by Herbart in reference to the education of the mind. In this connection it is true that the ultimate object is to produce a union of knowing and feeling. Habit means psychologically a union of ideas which no longer involves conflict and effort. Herbart's object is to explain how this state may be produced He speaks elsewhere of feelings which arise outside the circle of ideas; here he is concerned with what we might call mental feelings The truth of his doctrine might be illustrated largely from the pathology of the mind; here it is enough to point out that the kind of knowing out of which feeling is said to arise is not a mediæval "cognition," but that which Herbart has already translated from passivity to activity Whatever may be said ultimately of this view, it is not correct to speak as if Herbart was attaching the feelings to some passive form of receptive knowing. Most criticisms seem to labour under this misreading of the text. Yet on this point rests Herbart's claim to have provided a psychology specially applicable to education. It was the interest in mental growth and in the union of right thinking with right feeling that led Herbart to understand how closely the qualities of character depend on the complete fusion of knowing and feeling in one indivisible state of mind, evolving into the kind of clearness which is only attainable through self-expressing actions

Kant had declared that there was a process of apperception in which the consciousness of self was united with consciousness of the given object This point was taken up by Herbart as a problem, the method hitherto followed must be finally justified by its applicability to the problem of self-hood,

The essential feature of mental growth and expansion is described by Herbart in terms of apperception. Though the soul is a metaphysical postulate, it is not a psychological datum; all that we have given is the sum of presentations existing at any time, this it is that we call "*self*," and it is this that we denote by the "I" in "I think" or "I will." If we say "the snow is white," our statement is to be interpreted, psychologically, as meaning that the snow-complex includes the white-perception as an element; this is a typical *objective* judgment. But the statement "I think" looks different; it seems to be subjective and to imply a wholly different operation. If so, our psychology must split into two; the operations of the mind must be different in judgments of sensation from what they are in judgments of reflexion; outer and inner sense must be opposed as well as distinct; and, ultimately, the "I think" will take on a peculiar character, recede into the inner sanctuary of the soul, and be a fruitful germ of mysticism. To overcome this tendency is really the object of all the anti-Hegelian "scientific" psychologists

Since apperception is a process in which a relatively stable mass takes up and absorbs a less stable presentation, it will be obvious that the scale of apperceptive levels is without limit. This logical consequence Herbart accepts. Just as the snow-complex assimilates the white-presentation, so the ego-complex itself may assimilate a presentation; this is, in fact, only the general mode of psychological procedure converted into an apparent judgment about the self But there must be a knower as well as a known; I cannot put my whole self outside myself and then take it back, the ultimate apperceptive mass must contain all the factors, subjective and objective, that appear in the psychological ground of judgment If the term "I," used in a series of judgments, such as I think, I will, I feel, I speak, has any distinctive significance, it must stand for an apperceptive mass which is capable of assimilating these differences, it must therefore be the most permanent and the most general system of presentations

This solution satisfies the requirements The "I" of our consciousness is explained, but not explained away, it is made intelligible within the limits of scientific psychology Other advantages are also attained The Ego is not allowed to lapse into metaphysics and become transcendental, it moves, it grows, and it changes, yet it tends to persist, to be relatively permanent, and to harden into a resisting force just as character does It does not convert itself suddenly into a substance, yet its inmost nature escapes us just because the attempt to grasp it is a process in which it operates, and by its operation moves on to a higher degree of Being. Herbart never forgot that a science does not limit its subject by defining it The subject of psychology seemed to him to be unlimited, he anticipated that the greater part of it would remain for ever unknown, but he found in this no reason to despair of the science, for all sciences are in the same position. As the natural sciences are not adequate to the subtlety of nature, so the science of mind cannot make an immediate advance to the absolute limit of knowledge The horizon continually recedes as the explorer advances, that is the mystery and the charm of progress, not its condemnation.

So far we have been considering mainly what Herbart calls "fundamental principles" We now pass to empirical psychology, the second part of Herbart's *Lehrbuch* As we require an analysis of the mind, it becomes necessary to find some principles of classification The doctrine of faculties has hitherto furnished a kind of classification, and the subject can be formulated by discussing the value and the defects of that proceeding A very fundamental defect is the tendency to observe only "the social, the educated man, who stands on the summit of the whole past history of mankind" Psychology has tended to neglect all but this ideal type, the rational man, it has dealt with *a* type, not with *all* types its method has been unscientific because it reaches only limited statements which it exalts into universal facts If we take into consideration children, savages, idiots, and abnormal conditions of the average mind, the universality becomes very doubtful "There are no universal facts," says Herbart, "purely psychological facts lie in the region of transitory conditions of individuals" The cut-and-dried system of faculties is therefore condemned by the very nature of the facts which it pretends to systematize. What can be done with such materials?

In the first place, observation gives us extreme points, such as animals and men Psychologically these are describable as extremes of sense and reason, the animals have the lower faculties, man has the higher But the gradations are infinite, every activity passes gradually into another; so that the sense of animals is to some degree rational, while the reason of man is always largely sensuous. We can classify mental activities according to their quality as presentations, feelings and desires The degrees of higher and lower will be found in all these; the common distinction of sense and reason must be taken to indicate a confusion of two things, namely, the degree of development and the character of the activities. Herbart proposes to unite these classifications, which then give the following general scheme —

	Presentation	*Feeling*	*Desire*
Higher	understanding	artistic	rational will
	judgment	moral	passions
Lower	imagination	pleasure	instincts
	memory	pain	appetites

This picture of the mind is so far new that it may be said to abandon entirely what is usually called the doctrine of faculties Its historical affinities are interesting. By looking toward all conscious beings and not thinking only of the rational educated man, Herbart puts himself in the position taken by Aristotle His idea of extreme and mean states is an obvious recollection of Aristotle His general scheme, with its parallelism of theoretical and practical activities, shows the same source For immediate inspiration Herbart did not require to go further back than Leibniz, to whom he owes, among other points, the ideas of continuity and activity Finally, in rejecting the idea of pure reason and refusing to break the ascent from sense to reason, Herbart intends to show his opposition to Kant and his preference for the anthropological standpoint of the Greeks. Herbart shares with Plato and Aristotle the belief that there is no ultimate explanation of the soul's nature or being; he feels, as they did, that the infinite diversity of life mocks our little systems of classification, while the hope of progress drives us on to divide and unite eternally The extraordinary range and power of Herbart's mind will be increasingly obvious as we describe his teaching. At this stage we can only indicate the way in which he goes back behind all the formalism of the preceding century to the fresher spirit that knew no scholasticism and no doctrine of faculties.

Before Herbart's time psychologists had combined the idea of a scale of activities with the idea of faculties, this fact is noted by Herbart and criticized The systems to which he refers are—(*a*) those which take one basis, sensation, and present every activity as a transformation of sensation; (*b*) those which treat sense and reason as coexisting parallel lines. The objection to the first is that it can give no account of the way in which the higher activities conflict with the lower; in other words, it never explains the struggle between reason and sensuous impulse. This is a fact, and Herbart declines to follow a method that must ultimately exclude the phenomena of the moral life. The objection to the second is that it involves a faculty of Reason, for which there is no evidence. In this discussion Herbart adjusts his relations to empiricism and transcendentalism, thinking of Condillac and Kant especially. The ethical remarks appear at first irrelevant. "The greatest evil," says Herbart, "is quite as little purely sensuous as sensuousness is pure evil." Here, however, we have an important point. The manipulation of psychological schemes is rarely free from prejudiced suggestion. Herbart detects the motive which, from Plato onwards, led to the description of sensuous impulses as "lower." It is not only psychology that must be made scientific; ethics must progress to meet it. So long as rational conduct and moral conduct are identified, neither can be properly understood; in brief, Kant's idea of the practical reason will lead us astray if we steer from the first toward a will devoid of sensuousness. Herbart is ever on the watch for those cross-purposes which make false beginnings; with the science of the psychologist he combines the art of estimating psychologically the motives that have produced other systems.

At this point Herbart inserts another criticism which may be noted since it makes clearer the progress of his thought. Unreflecting thought speaks of the self or Ego as taking its material and then giving to that material its unity. Kant restated this common belief as a cardinal doctrine, declaring that "all combination is a spontaneous act of the power of representation." Herbart declares that "everything like this Kantian assertion must disappear completely from the dogmas of psychology." As we learned above, Herbart makes the elements do their own work; the Ego is for him the relatively permanent apperceptive mass of ideas; this notion of an "act" is offensive to him just because he thinks of unification as a perpetual process, going on even below the level of consciousness, and declares the Ego to be a product rather than a producer of unity. If we do not imagine that we can analyse a given static Ego, but in place of that consider only the empirical data, we must arrive at the conclusion that there are no strict lines of division between men and animals or between higher and lower faculties

If we are clear on two points, namely, that all things continually change and that classifications are only instruments of science, there is no particular reason for dropping the usual terminology. Herbart actually adopts the familiar scheme, and discusses presentation, outer sense, inner sense, reproduction, feeling, desire and will Omitting the commonly accepted ideas about these, we may notice the special points which distinguish Herbart's treatment

(*a*) It should be noted that Herbart regards sensation as the material of experience, it is an organic process which passes into perception when the mind discriminates. The mere sensation is not analysable because it is either a mere bodily change or rises into the state of consciousness called presentation. All that we can do with sensations is to group them in classes

(*b*) The inner sense is not indicated by any perceptible organ; it is assumed in order to explain our apprehension of our own condition.

(*c*) The most significant feature of the inner sense is the production of series, such as space, time, number, degree (intensive magnitude) These forms of perception are not innate or *a priori*; they are ways in which the mind relates one to another the individual perceptions The difficulties presented by space are summarily treated by Herbart as we can observe our own inner activities, we can abstract from those activities and think the *relations* without reference to the objects originally given in the relations This is the origin of geometrical space, arithmetical numerations and all similar constructions.

The idea of series is important. Empiricism treats sensations as occurring in time and as sequent, thus creating an insoluble problem. For if one sensation gives place to another, how will the mind ever reach the point of having a plurality of sensations to compare or unify? T. H. Green asks, in reference to Hume, how can a series sum itself? In Green's sense of the terms, it cannot. But Herbart understood what was wrong with the empirical expressions and began with the kind of series that does sum itself. In the first place, Herbart does not talk about sensations, but about presentations These are activities which overlap; as the first a is followed by b, it diminishes gradually; similarly b diminishes as c supervenes. The series, therefore, sums itself as it is created, for the last state C is equivalent to $a + b + c$, each element existing in its own relative degree of strength. Other series may be formed, such as $l + m + n$, $p + q + r$, and these other series may cross the original series if any one element is common to two or more, as e g $f + b + g$. Again, the relative strength of the different elements in a series varies from time to time, and some elements may drop below the threshold of consciousness. In such a case the series is shortened. These points taken together furnish a satisfactory explanation of (*a*) the formation of series; (*b*) the possibility of arriving at the idea of series as such, (*c*) reproduction, or the revival of past ideas from present states of consciousness; (*d*) processes of memory where the whole series of actual presentations is abbreviated and only certain elements of the series are retained

The idea of series is used to explain the facts which gave rise to the doctrine of "association" Herbart sets himself to explain not only the reproduction of a sequence of ideas, but also the order of that reproduction. If we have first the idea A, this becomes a when displaced by B, the real union is therefore between a and B. The next state of consciousness comprises $a_1 + b + C$, and so on Then, since a and not A is the real associate of B, if we start again from A, there will be no revival of B until A has become a. The order of reproduction is thus established by means of the ideas themselves and their qualitative relations. As this is a simple law of connexion deduced from the unity of the soul, it makes the so-called Laws of Association superfluous; Herbart discards those laws in favour of a general interconnexion existing continually in the whole mass of presentations and operating as we have indicated.

Feelings, that is to say all forms of pleasure and pain, can be classified as—(*a*) those which arise from the nature of what is felt, e.g. aching teeth, (*b*) those that depend on mental conditions; (*c*) mixed feelings. Here the second class is of interest, because it indicates the difference between desire and feeling. Desire does not necessarily arise out of feeling, for some feelings are caused by unsatisfied desires. Herbart detected a difference between feelings of pain, such as toothache, and feelings of tension or anxiety; he rightly noted that the feeling of ineffective effort (as in trying to untie a knot) may amount to positive discomfort; he failed to make any further analysis of such conditions The acceptance of mixed feelings is a reminiscence of Locke

Passions are "rooted desires," while emotions are "transitory variations from the state of equanimity." Emotions are often described as stronger feelings, but this is an error The strongest feelings are often equable, as e.g. love of one's country Emotions tend to make one's feelings dull an emotional nature tends to insipidity Herbart here anticipates the distinction now expressed by the use of the two terms sentiment and emotion; sentiment being the tendency toward emotions of a certain kind, emotion itself the active outbreak occasioned by some particular existing cause It is also worthy of notice that the physiological theory is not rightly regarded as opposed to Herbart Ribot has pointed out that Herbart [*Lehrbuch*, 58 (100)] speaks of laughter as an "affection" which has a physical reverberation and reacts through the body on the mind Further (§ 64), this is asserted of all *Affecten*—emotions.

Desire is a tendency to action, either to attain the desirable or avoid the undesirable, or simply as a general tendency to action determined by the existing mental condition Herbart here reproduces the Aristotelian scheme of relations between desire, deliberation and will. This leads to the conclusion that reason is "neither commanding nor law-giving," and, as Aristotle and Hume had declared, "the reason doth not move to action"

Herbart regarded his scheme of mental processes as the right basis for ethics; he thought it was also eminently fitted to furnish a science of politics and a theory of "the destiny of man" In this respect Herbart was reviving the broad outlook of the Greeks and to a large extent consciously adopting and revising their doctrines. In the case of ethics he shows a persistent opposition to the ideas of freedom, and the supremacy of reason, which Kant had taught, or led others to teach Those ideas are treated by Herbart as contrary to the actual processes of the psychical mechanism and irreconcilable with the idea of continuity Freedom, in the sense of spontaneous activity, is always realized, but the progressive complication of ideas does not admit any sudden and disconnected assertion of one's "self." This follows quite logically from Herbart's identification of the Ego with the dominant mass of presentations. The theory of apperception involves the following consequences — deliberation is the interaction of ideas or masses of ideas, will is the final stage of deliberation, every volition reflects the relation of the forces in the mind at the time of choice; character is the equivalent of persistence on the part of any complex of presentations, being therefore a habit of mind, an act of will as an event becomes an element in psychic development, since it can be presented, and no presentations are wholly lost Herbart lays stress on the point that we have a memory of will, he desires to get away from the concept of will as a mysterious expression of a self lurking somewhere behind the normal processes of mind, ready to strike a sudden blow without any "phenomenal causality" In all this he is, of course, opposing the Kantian development of "transcendental will", he has a rooted objection to the transcendental His emendations of the current psychology of conduct show the influence of Locke and Hume

"Psychology," says Herbart, "will remain one-sided so long as it considers man as standing alone" From this we might well expect an elaborate social psychology. But Herbart's development in this direction seems to have been warped. He objected to Plato's parallel between the individual organism and the State; in its place he proposed another which differs only because the psychological basis is different. In place of the Platonic conception of three main "parts" of the soul and of the State, we have a multiplicity of individuals (presentations) struggling together, the formation of parties in the State (presentation-masses), and the determination of the character of a community through the character of the successful and dominant class All this throws more light on Herbart's powers of imagination than on social psychology. At the same time there is truth in the idea that the individual has a tendency to shape his own character by thinking over and adopting the tone of the society in which he lives This was the good point in Plato's view of "assimilation," and the doctrine of the "Republic," that the temper of the community is at once the product and the maker of the individual's temper, was the point that Herbart retained as an element common to his own and to Plato's exuberant imaginations

Lastly, Herbart did not flinch from a psychological description of the "destiny of man" Here again Platonism is very much in the ascendant, yet there is some foundation also, in the general system, for these last thoughts It is a cardinal point in Herbart's system that no activity of the soul is ever again lost Eternal life is therefore a possible idea, it is "an infinitely gentle fluctuation of concepts" No proof of this is given, the note is dogmatic "since the soul is immortal, the career of the individual man cannot be confined to the earthly life" Since the condition of permanence is equilibrium, eternal life is a perpetual calm. "The concepts of the child that has died young would very soon approach their general equilibrium, and so also the thoughts of the man of peaceful conscience, who is simple in his actions and desires, are not destined to any great change. On the contrary, no restless far-reaching mind, fettered by the world and suddenly torn therefrom, can attain the stillness of eternity otherwise than by a passage through violent transformations which, owing to entirely changed conditions, may be still more stormy and painful than those by which the passionate man is so often tormented in this world."

The value of this passage as a theory of the state after death need not be judged, it is quoted here for the light it throws on Herbart's own mind. For him experience was the only ground of explanation. But he would never admit that everything can be explained. Mathematics he took as the type and symbol of exactness; but he knew that it was essentially no more than a principle of method. Metaphysics he regarded as indispensable, because, sooner or later, the limit of the demonstrable is reached and the mind strains after some hypothesis whose guarantee is the system which it makes possible. This width of comprehension and depth of insight make Herbart one of the truly great thinkers known to history.

Herbart's work exercised a persistent influence on many subsequent treatments of psychology. The immediate circle of the Herbartians included principally M. W. Drobisch, Theodore Waitz, W. F. Volkmann. Drobisch emphasized the need for an empirical psychology and retained the mathematical form of exposition. Waitz inclined to make psychology into a natural science, following Drobisch in this respect, but ignoring the mathematical vein. Volkmann's *Lehrbuch der Psychologie* is a monumental work covering the whole field of general psychology, and comprising historical sketches that show a wide and deep knowledge of the history of psychological theory. These works, however, offer no essentially new point of view. The next important move which takes us from the original Herbartian theory to a new phase was made by Lotze. Parallel with Herbart's work and in some respects closely akin to it was the reform of faculty-psychology made by Beneke.

CHAPTER III

THE TRANSITION IN GERMANY—(*continued*)

§ 1. FRIEDRICH EDUARD BENEKE was a contemporary of Herbart. Writing in 1824 to Herbart, Beneke said, "independently of one another we have both arrived at the conviction that if psychology is to solve the problems which have been raised, it must undergo a thorough reform." This statement was not accepted by the disciples of Herbart; they would not admit that Beneke had followed an independent course, declaring that in all essential points Beneke stole his thunder from Herbart. To the whole sum of charges Beneke made, in his *Neue Psychologie*, a spirited reply which is worth considering in detail.

The facts of the case are simple. As Beneke said, Herbart and he both saw the need of reforming psychology. They both meant that psychology must be made scientific; both, without knowing it, thought that the term "scientific" could only mean "like one of the other sciences." Herbart inclined to take mathematics as the ideal type and model his psychology on that science. Beneke leaned more toward physiology, talked platonically about the "nurture of the soul," and drifted from that into biological terms when he had to consider functions. Both tacitly accept the old assumption that psychology can only be a science if it can be reduced to the form of some *other* science. But of the two Beneke seems to have chosen the better way of being wrong, and his defence of his doctrine against the Herbartians is a singularly interesting piece of polemical writing.

The defence begins with facts and dates; no man is wholly original, and he himself owes his mental furniture to all the books, teachers, and acquaintances from whom he has derived knowledge or inspiration. He names

Schleiermacher, Jakobi, Rousseau, Tetens, Garve and Aristotle; all these he had mentioned in earlier works as recognized sources of his own ideas; to them may be added the English school, Kant, Fries and Plattner. Only after his acquaintance with these and when his mind was formed did Beneke read Herbart's *Introduction to Philosophy*. From that time he read and appreciated Herbart, but these facts seem (to Beneke) to disprove even the possibility of plagiarism.

Mere biographical details are of no interest apart from what they prove The charge of plagiarism can be met another way, by showing that in reality Beneke has not followed Herbart. Taking up the individual points Beneke explains where he differs from Herbart. First, he differs in respect of the basis of psychology, he has not used nor wished to use Herbart's metaphysical basis nor his mathematical procedure Secondly, he will not allow that any part of philosophy comes before psychology, for psychology is the fundamental discipline, this position he claims to have maintained not only as a theory but in practice, for he has based metaphysics, logic, the philosophy of religion and ethics upon psychology, making philosophy an organic whole in a way that was not possible for Herbart. Thirdly, Herbart is an idealist in psychology, he himself is a true realist because he maintains that in sensuous perception something is given us directly by things. Fourthly, the active element in consciousness is with Herbart derivative; Beneke makes it primary. Fifthly, persistence is asserted by Herbart for all ideas, but with the added qualification that the obstructed ideas survive below the threshold of consciousness, Beneke means by persistence an actual survival in consciousness Sixthly, if the idea of association is found in Herbart, it is found also in Aristotle and the Stoics; Herbart has no monopoly of it. Lastly, Herbart has planned a reform of psychology, but not actually achieved it; he himself has planned differently and succeeded because of the difference. These, then, are the points which Beneke cites as distinctive of his work. We may now proceed to consider his teachings.

The accepted starting-point for all philosophical disciplines was, in Beneke's time, experience. The word was common to all, but the understanding of it was various For Beneke it means the course of conscious life, taken primarily at the level of maturity. If we take the ordinary man or the typical mind as the central point, we have also as points of reference the mind of the child, which is less mature, and pathological cases which are divergent from the normal Contrast and comparison will enable us to analyse the mind, and a regressive method will furnish its history

Men are infinitely various, the mature mind has a character which makes it unique To explain this without unwarranted assumptions we must assume that the mental life is a system of activities and that the mode of action is from the first determined by the nature of the individual The content of the mind is therefore due to the interaction of native disposition and circumstances The native disposition is identical with the "prime faculties" (*Urvermögen*), which are distinctive forms of sensation and movement. These "faculties" are not separable from impulse and striving, so that mental life begins with a tendency to realize native powers and proceeds by assimilation

Here we may pause to take stock of the results The starting-point has been defined, and, while the soul is in no sense a mere receptacle for impressions or a *tabula rasa*, the requisite presuppositions are reduced to a minimum, including only sensibility, movement, and objects The presupposition of objects is intended to mark Beneke's disapproval of Fichte's method, which he elsewhere declared to be the influence that had made Herbart go too far The disciples of Herbart claimed that their position was established by "experience" Beneke denied this on the ground that the Herbartian could never really get back to experience at all, there was no road from their base to their goal In this Beneke was right, it is always possible to go too far in the search for ultimates, and Herbart, by starting from metaphysics, showed that he had not fully appreciated the Kantian teaching or adequately learned where to stop. Beneke reforms psychology without transforming it; he explains phenomena without going beyond them or deriving their being from the earlier stage of their not-being.

This last point of method is the guiding principle of his explanation of the unconscious. The unconscious is not an under-world from which the conscious states arise by a miracle of resurrection. All mental states persist, as it were, in the same plane. But they disappear from direct consciousness in various ways. They may enter into more developed states in which complexity is represented by a change of quality; or they may persist beyond the horizon of actual thought While many writers speak as though there was a scale of degrees of consciousness and it was possible to go below the zero point to the subconscious, Beneke regards this as an error For the subconscious is then only a name for the vanishing-point and all below it, a Not-Being out of which none but the Hegelians could evolve the Being of real consciousness.

What, then, is the process of development which explains the passage from the simplest to the most fully developed states of mind? In the beginning there are "prime faculties" which by nature determine the character of stimuli The child turns to the light or takes pleasure in some colour, it retains an impression which is never wholly lost, for, if the same impression is received again later, it is not like the first. It is both another and a second impression; second, because the first survives into it. In course of time this procedure results in a definite consciousness of the impression, a true experience, the subsequent development is a multiplication and complication of these experiences. In and among these experiences as events there is a continuous unity which reveals itself in the consciousness of relations and the reactions of the mind as a whole, at each stage, upon the newly acquired elements. Throughout this process, which is described as a process in time involving real increments and not mere "self-development" in the Fichtean sense, the outer experience and the unconscious area are continually sending in their contributions. These two constitute the "beyond" from which the conscious life perpetually derives its matter. As Beneke speaks of "faculties" as original data, so he speaks of new "faculties" as continually arising. This language seems to have given unnecessary offence. By "faculty" in its first use Beneke means no more than the unique character of the human mind, beyond which it is profitless to seek for a starting-point; analysis cannot go on to infinity, and the facts indicate that there is something distinctive about mind, else education would be vain. The child, says Beneke, differs from the animal, it has greater possibilities, and those possibilities are its "faculties" Similarly, as development goes on, the basis from which the person reacts must change; in other words, new faculties arise If we are not obsessed with the idea that the word "faculty" must indicate bad psychology, it will be obvious that Beneke's use of it does not prevent him from reforming the wrong idea previously associated with it. His statements then appear to require neither correction nor comment

In the *Lehrbuch der Psychologie*, Beneke describes four fundamental processes. Of these the first two, namely, the initial process of sensation and perception, and the production of new "faculties," have been stated in the last section. The third is the process of reproduction as determined by the formation of "traces" (*Spuren*). The fourth is the law of attraction or association. These will now be stated more fully.

The doctrine of "traces" is one of the outstanding features of Beneke's psychology On closer inspection there seems to be little novelty in any part of it except the name After dealing with stimuli and the primary power of reaction, Beneke proceeds to show how the activity of the mind develops. As he is opposed to innate powers, he must substitute for this hypothetical store of resources a gradual acquisition of power due to assimilation This is done by the supposition that every activity of the soul once aroused never wholly disappears again; it remains as a "trace," and it shows itself in the tendency of the mind to acquire specific modes of action or "dispositions" These acquired dispositions take the place of the "innate" ideas and are intended to explain the presence in the mature mind of what, in the language of physiology, might be called specific energies. Through these traces the mind acquires greater independence in relation to effects produced from without. Hence there arise new kinds of activity, such as the striving after what is not presented (desire) or the effort to remember; in general "the trace is that which lies between the production of an activity of soul (sense-impression) and its reproduction" (*Lehrbuch*, § 29).

Of the traces as such we are not conscious. They do not enter into consciousness, but they enter into the conditions under which we become consciously active. There is a natural temptation to think of them as structural changes in the brain and nerves, but Beneke refuses to admit that psychology derives any help from physiology. The body grows by assimilation; so does the mind. But introspection shows that the mind reproduces what it acquired before; it is not like a tree that puts out new leaves, for it puts out on occasion the old leaves again.

The independence now acquired by the mind is shown in another way. There is a persistent tendency toward equilibrium, which is attained by transferring elements. At a lower level we are to suppose that the stimulus absorbs the available activity of the soul. But as development proceeds and complexity increases, this is not the case: a certain excess of activity is produced and becomes mobile. For example, love and joy heighten the mental activity: as Beneke would say, these elements (or forces) are transferred to the side of the perception, and its activity is made more intense by this reinforcement. Conversely, hatred and sorrow abstract our powers from the object with which they are associated and reduce the activity by which they are presented. Here, indeed, Beneke seems to have fallen a victim to his own use of terms. Translated into the ordinary phraseology, this is clearly only a way of stating the facts of interest and attention, made difficult by the supposition of a plurality of invisible elements. Here, as in many other points, Beneke is too anxious to achieve some striking expression which will show his opposition to Herbart. In Herbart's system the ideas are made to conflict and mutually repress each other; logically this should lead to mutual annihilation, though that is in accord with the letter rather than the spirit of Herbart's teaching. Beneke substitutes for that conflict of ideas his own theory of movable elements, to explain by external reinforcements the relative strength of different elements at different times. As a theory of attention this has some merit, and may be regarded as leading on to the position afterwards developed by Ward and Lipps.

The historical importance of Beneke's work is to be found in its opposition to all forms of transcendentalism. If this is forgotten his writings lose much of their interest. There is no longer much tendency to speak of faculties, intuitions or reason in such language as offended Beneke; we feel now that "psychology as a natural science" is no longer a startling title for a treatise. The changes that have ended in the present situation were beginning in Germany when Beneke wrote his "Textbook." The remembrance of this fact reconciles us to his repeated refutation of innate ideas, the inner sense, pure reason; his own explanations of the psychic life are a continuous polemic against those terms and theories As Beneke knew, the ground had been well prepared For a counterblast against "pure reason," he could look to Hobbes, for the idea of "reflection" he went to Locke, the whole history of eighteenth-century thought furnished materials for a new construction, and when we come to that construction it often sounds like an echo of English Empiricism Beneke had no desire to conceal the fact that he meant to use the English psychology to refute German idealism, the outcome of this effort was a psychology obviously compounded of English analysis and German synthesis, a compound that was in its day the quintessence of sober speculation.

Beneke, as we have seen, began with simple elements, not simple ideas but (after the German manner) original forces. The soul, he said, has powers; in fact, it is no more than a totality of powers. If we ask what these powers are, the answer is given in a list of activities; we know the activities, and there could not be an activity without a pre-existing power After this nothing remains but to describe the behaviour of these powers and write a life of the average soul. Sensations are described and we learn their nature and relative importance, then comes Reproduction, and we are told that "memory" is not a faculty, it is simply a power of reproducing ideas dependent upon the fact that "traces" were left behind after the original experience. Beneke seems quite satisfied with showing how wrong it is to say that we came into the world bringing our memories with us; psychologically, at any rate, one cannot begin life with a past Beneke's own explanation is robustly empirical; it is the doctrine of the Association school with proposed amendments The objection, says Beneke (*Lehrbuch*, § 86) to the usual theories of Reproduction is that they are much too general in their statements; their laws are such that no explanation is given of the actual results, as, for example, when we are told that a revival is due to association by similarity, as if one idea were never "like" more than *one* other idea. Something better than this must be attempted.

When an experience lapses from consciousness it loses something, to bring it back again that loss must be supplied. This is the fundamental explanation of all reproduction, but it would not seem to explain much unless further developed, it seems indeed to have been underrated, being at least a thoughtful attempt to solve the most difficult problem in psychology, and for that reason an elaboration of Beneke's statements may be admissible.

In the case of sensation the best result is attained when the stimulus is exactly adequate to the capacity This adequacy is not equivalent to a fixed quantity, it is relative to the actual capacity at the time. If a person has been long in the dark, a small amount of light may be dazzling; if a sound is expected for a long time it may be heard, though a much louder sound would usually go unnoticed. These observations, interpreted psychologically and not physiologically, suggest the convergence of forces upon the given stimulus, causing it, in consequence, to come over from the not-conscious to the conscious area of the soul. An objective stimulus and a portion of the not-yet-conscious psychic material are regarded as being in the same position; they are both, for the time being, part of the not-self. The objective stimulus excites latent powers when it produces a psychic result; something goes out to it and qualifies it for conscious actualization. Similarly, when an idea is out of consciousness, it may be reinforced from the existing field of consciousness and so brought over into that field. Analogies in this kind of subject are necessarily misleading; but, as Beneke says elsewhere, we are compelled to use doubtful parallels to make these matters intelligible at all. Here we might use the example of a system of lights dependent on one main source of strength, gas or electricity; as one is turned down the others grow brighter. The changes of consciousness are a fact which we cannot hope to explain fully; the only question is what explanation is to be preferred. Beneke's view is that the elements are qualified by relations such that one rather than another is affected by every change. If an accident in the street makes me forget that I have urgent business on hand, when the excitement is over the forces of the mind will again converge upon the supposed thought and raise it to consciousness.

The advantages of this theory are twofold. The fault of the ordinary associationism lies in joining together particular ideas; Beneke's theory admits the reproduction of all ideas at all times through any adequate transference of forces. The fault of Herbart's method lay in making the elements too individual and resolving the mind into a collection of ideal forces. Beneke's view treats the single presentation as a function of the total psychic activity. The difference between Herbart and Beneke is probably not so great as Beneke liked to think; yet something is here gained by treating the soul as a moving system of forces rather than a place in which separate forces struggle together.

Reproduction is the central theme of Beneke's psychology. If that has been satisfactorily explained, memory and recollection are successfully withdrawn from the list of ultimate faculties. Intellect and reasoning can be explained on the same lines by showing that groups and series of ideas tend to come into existence and fuse into concepts. Judgments are not operations of a supersensuous "Reason," but express the psychological relation between an individual object of thought and the series or group in which it is placed. Such a judgment as "I am here" implies no intuition into a metaphysical Self. Its psychological ground is a group of ideas fused into the concept "Self" and made to converge upon one intensified element. As the intensified element is variable, the whole group tends to become independent of these special convergences; thus the *abstract* conception arises, not being abstracted in reality, but rather differentiated through continually having its identity repeated with partial variations.

These cases, of the Self and of abstraction, show what Beneke means by saying that his psychology is the basis for metaphysics and logic He was still more concerned to make it serve as a basis for religion, ethics and education. To explain how this was done we must briefly consider his treatment of desire and will. The activity of the soul is made the starting-point, the soul is essentially active, for it is force rather than substance The effort comes before the presentation (*Lehrbuch*, § 167), for the soul strives from the first to realize its own primitive powers A sense-impression, as it ceases to employ a primary force, sets it free. Collateral with those liberated forces there is normally uneasiness, due to the existence of unrealized and therefore unsatisfied powers The former are strivings *after something*, wants associated with definite satisfactions, the latter are blind strivings which (being unattached and by definition mobile forces) automatically converge on the strongest of the allied psychical forms A striving or conation is therefore either a specific want or a vague unrest The latter state leads to actions that are suggested either by others, in the case of children and empty-minded persons, or by an idea which is naturally strong. The former case is that of imitative action, the latter is illustrated by the process of waking from sleep, when there is first a general activity and then consciousness of the last occupation or of some important business.

According to Beneke the fundamental activity passes into conscious effort when the stimulus is no longer adequate. If an experience is pleasant, when it begins to cease as a full stimulus it gives up part of its energy, and this part is converted into remembrance of the pleasure or into desire. There is no absolute division between these two, and in general Beneke recognizes no opposition between knowing and striving such as the earlier writers made between passive and active powers. All striving, therefore, is presentative in some degree, if the mind is mature, the laws of the presentational consciousness can be directly applied to this sphere, and the principles of aggregation, complication and dispositions reappear as explanations of moods, inclinations and passions.

The passage from conation to action affords some difficulty. In the sphere of action there is a difference between involuntary and voluntary movements; involuntary movements are due to a capacity for action and an adequate stimulus from outside, voluntary actions, if they are not to be consigned to some mysterious "Will-Force," should be analysable into similar factors Beneke rises to the occasion. The idea of an end as desirable is equivalent to a certain degree of effort, so far, then, the available force is exhausted, and there is no reason why the desire for an object should not be satisfied by the idea of the object. But other "primary faculties" are present, and if these are free they transfer themselves to the idea of the end, swell the stream of forces and produce, over and above the ideas, the appropriate actions This exposition is offered as satisfactorily explaining the origin of desires, the fact that desires and tendencies often remain latent for long periods of time, and that at different times different inclinations break out into action The theory claims the merit of treating all these phenomena as events reducible to common principles of natural forces without the special intervention of new faculties

We cannot follow Beneke into all the details of his work. The reader will now be prepared to hear that productive imagination and thought are equivalent to new combination rather than creation of elements, that will is a desire combined with a presentational group or series, and that the whole range of conscious activity, up to the achievements of genius, can be analysed as complex forms of conation and representation. A third main class of phenomena now calls for consideration; in addition to knowing and willing there is also feeling. Feeling is immediate consciousness; it is either consciousness of a state of the inner conditions, or it is due to a relation between those conditions and the idea of some other possible condition. Feelings are a distinct class of phenomena, but not a distinct class of activity; they are a kind of direct valuation of activities. As we have seen above in the case of pleasure, the memory of pleasure, desire for pleasure and feeling of pleasure are really variations of the same act. The classification of the feelings can therefore be based on the four fundamental processes (1) Feelings may be due to objective causes (the stimuli) as in the case of feelings of contrast, change, etc. If the previous subjective state is a factor here, we get feelings of novelty, astonishment, etc. (2) A second class of feelings has for its ground the "primary faculties" and their relations to the stimuli. Feelings of liveliness and excitement are of this kind, and the whole range of æsthetic feelings; for we *feel* the beauty of an object in proportion as we are conscious of inner states which we project into that object. As a deduction from this, it follows that different people are capable of different feelings in relation to the same object, and development changes our æsthetic values; the child finds in her doll her own moods; the adult has other interests which give a new character to all joys and sorrows (3) The fusion and congruence of ideas is the ground for another type of feeling We have a feeling of clearness when there is uniformity of action among presentations and "traces"; if the number of elements is inadequate we feel obscurity, and if elements of different kinds are mixed the result is a feeling of confusion A feeling of worth, combined with a feeling of agreement between individuals in respect of values, constitute the moral feelings. This disposes of the "innate faculties" by which the "moral" had been kept separate from the natural. It is hardly necessary for Beneke to tell us that he is opposing Kant. (4) The union of unlike elements also gives rise to many feelings, e g. the feeling of inclination toward another person, arising from unanimity in opinions and purposes. These are the four roots of all feelings; the growth and development of the feelings follows the course of psychic growth in general, that is to say there are traces left by feelings, aggregations of like feelings, dispositions and all the other processes which end in the fixed character.

§ 2. The fame achieved by Herbart and by Beneke was well deserved. They both grasped the essential point in the development of German idealism, namely its tendency toward an isolation of categories and its inclinations to develop the forms of thought without previous study of the actual mental processes. Herbart did not entirely free himself from the belief that formal determinations of mental processes could be taken as a beginning; his use of mathematical symbols was largely due to this presupposition. Beneke avoids the symbols, but does not wholly conceal the fact that he is working with schemata in a dogmatic spirit. In both cases the works produce the impression of being uncritically deductive Herbart's metaphysical basis is explicitly stated; Beneke is no less metaphysical, in spite of his verbal rejection of metaphysics In theory Beneke is purely introspective, in practice he employs many factors which no introspection could supply. The method of the natural sciences, advocated by both, seems to have been grasped by neither. Beneke achieves a scientific form, but he has no clear idea of the difference between scientific form and scientific procedure This is shown at last by his brief comment on immortality The body, he thinks, is inferior to the soul, an appendage which serves some useful purposes, but there is no proof that psychic activity declines as the body degenerates. On the contrary, powers must mass themselves in the soul, and therefore it continues to increase in strength If it is possible for Beneke to ignore physiology and describe the growth of the soul from introspection, this can certainly not be derived from introspection; nor can his many references to animals be given any value if he is not prepared to justify them in part by the analogy between human and animal structures. In these and many other points Beneke's naturalism is diluted by his uncertain attitude toward the ultimate subject of his science It is obvious that, for better or for worse, Herbart and Beneke lived in the shadow of the great idealists. In the midst of Beneke's work, between 1833 and 1854, Weber, Fechner and Lotze had already entered the field. The movement which the philosophers made toward science was met by the movement of the scientific workers toward philosophy. The ambiguous subject of psychology was the common ground on which both parties were to meet.

The gap between transcendental speculation and scientific experiment was temporarily filled by the idea of practical application. It was the idea of education that brought both Herbart and Beneke to struggle for a theory of the soul that should have some direct practical significance. The educator is brought face to face with the idea of growth; he is compelled to adopt means for stimulating mental development, and that amounts to a crude form of experiment guided by observation and the verification of results. It would be better to describe Herbart and Beneke as practical psychologists, rather than credit them with the conscious purpose of being scientific, for their practical interests explain their affinity with scientific work, while the belief that their "new psychology" was a scientific movement leads to disappointment and recriminations Herbart and Beneke were beloved of the pedagogues, their works were an inspiration to educators, but not to men of science. The medical faculty, equally unsatisfied by the Hegelian idealism, found a point of attachment in Schopenhauer, whose work must be classed with that of Herbart and Beneke as one of the great mediating philosophies. For Schopenhauer supplied what the others lacked when he definitely separated the objective from the subjective aspect of psychology.

Between the age of Hegel and the age of Lotze, roughly speaking 1830 to 1860, there lies a period full of movement and change Its culmination was in the scandalizing materialism of 1850 onwards, but that era of audacity was not the measure of its power or its significance The collective philosophic mind of Germany had been slowly rising, balloon-like, to an atmosphere in which it was barely possible to maintain life That the Hegelian dialectic should be of unequal value for all the departments of thought was incredible only to the extremists. The cleavage which it made between those who reflected and those who observed was a disaster in all cases where a distinction of outer and inner served a good purpose. In physiology, for example, Hegelianism was useless; Schelling was found to be an inspiration even there, but men of science were advised to follow Fries. In psychology Hegelianism held its own by insisting that the science of the soul was a subdivision of the philosophy of spirit. Being in any case a dubious quantity, the psychology of the Hegelians after the master's death in 1831, steadily lost ground and finally succumbed before the attacks of the anthropologists.

In order to fix the terminology and establish definite points of reference, it will be useful to note that spiritualism as here used refers to the "Philosophy of the Spirit" and in general the purely speculative treatment of the subjective processes; its most extreme opposite is materialism, and the intermediate position is that of anthropology, as we have already found that term used by Kant, Fries and some Herbartians. This anthropology is, in a large measure, a return to the eighteenth century. It struggles once more to put the common life of common men in the foreground, to talk about thought as an operation of the human organism, and in general cease from all supernaturalism. It was inevitable that those who thus allied themselves with all the forces of gravitation inherent in mankind should be carried down with an impetus beyond their control. Apart from the academic questions of truth, there were questions of practical importance; the dates 1830 and 1848 are symbols of revolutionary moods, marks for the epochs at which men were challenging prerogatives and questioning authority. Psychology never wholly absolves itself from the task of answering the question, What is Man? The distinction between what man is and what he thinks himself to be is undiscoverable, and therefore, in its broadest outlines, psychology is unable to avoid being revolutionary or conservative, democratic or autocratic, voluntaristic or intellectualistic, according to the age. In 1827 Hegelianism was an official philosophy so far autocratic that its critic, Beneke, could be deprived of his lectureship for opposing it. From that dominating position it declined, until it became the best abused system in Europe. This change of opinion must be followed in outline in order to obtain an intelligible view of later works, for out of this period of change and its destructive work came the more important and balanced reconstruction. The central topics are philosophy and science; the relations of these two and their conflicting but not irreconcilable views of human life form the guiding line in the study of this quarter of a century.

The basis was the work of Kant. In the distinction of knowing, feeling and willing there was given a definite starting-point for each succeeding theory Knowledge was treated by Fries most directly, and in wider connections by Herbart and Beneke. The claims of feeling to be the dominant element in human life were advocated by Jakobi and, in a general way, by all the earlier romanticists who looked to Schiller as their leader. The only effect of this movement was to check the growth of intellectualism, its mystical tendency preventing it from elaborating any scientific doctrine Closely allied to this in spirit was the fervent theology of Schleiermacher which, somewhat unintentionally, undermined the speculative doctrines by basing religion on feeling This was quickly taken up as a definitely anthropological position, its subjective tendency was soon emphasized, to the exclusion of every other aspect, within twenty years of his death Schleiermacher was quoted as an "atheist," for in place of religion (it was said) he had put an experience which would be just as possible without any God, and in place of theology he put the study of human beliefs (Pisteology) In fact, this appropriation of Schleiermacher by the anti-transcendentalists was justified; the modern psychology of religion is rooted in Schleiermacher's conceptions, though that writer certainly had no intention of aiding the progress toward Feuerbach. Yet the connexion is undeniable. Theology is a wide subject and comes near to the hearts of all men In 1840 it was more in vogue than any other kind of literature, and the problem of God preceded and introduced the problem of the soul. During a long evolution Feuerbach, who was born in 1804, and wrote continuously from 1828 until near his end in 1872, ran the whole gamut of the contemporary movements. As he neatly put it, "God was my first thought, Reason my second, Man my third and last." The main work was the much-read *Essence of Religion* which was in character and effect a book about man, for religion is man's relation to himself; it matters not whether we say God is Love or Love is God; gods are made in the likeness of man, and so on. At the end Feuerbach committed himself rashly to the epigram, Man is what he eats, and so reached the limit in this direction. In spite of his extravagances Feuerbach made history; he brought into prominence the subjective factors in the great historical religions and said many things which were to his contemporaries anathema and to his successors obvious truths.

When Feuerbach wrote his main work (1841) the sciences were only beginning to make headway in Germany (*vide* p. 108). The next twenty years saw great progress in many directions, among others in physiology and the science of the organism. Feuerbach, being only acquainted with these sciences at second hand, did no more than reflect their existence in his treatment of speculative problems In this respect he did not lead, he was pushed The real forces were Jakob Moleschott, Professor of Physiology in Zurich 1856, Turin 1861, and Rome 1879 (died 1893), Ludwig Buchner, a physician (1824–99) and Karl Vogt (1817–95) All of these published in the decade from 1850 to 1860 works which created extraordinary outbreaks of feeling They were extremists; they were in the genuine sense of the term materialists, they wounded sentiment and shocked one party, while they rejoiced the hearts of the other. In their attacks on the metaphysicians they failed entirely to see that their own materialism was an extravagant metaphysic; they lost even the scientific quality of their foundations before they had finished their pseudo-scientific monuments to matter and force, but they exerted an abiding influence in laying upon all classes of men the necessity of recognizing the close union between body and mind. The details of their works do not concern our subject, but the spirit and tone of this conspicuous crusade against transcendentalism is too definite and too powerful, for good or evil, to be ignored.

§ 3. The materialism just referred to was a stray product of scientific progress which seemed in the popular estimation fatal to all trivialities such as art, religion and philosophy. In this respect it differed greatly from the earlier scientific era, the days of Bichat, which also exerted a definite influence on speculative thought through Schopenhauer (1788–1860). Of the three faculties named above Schopenhauer selected Will as the most fundamental Under his hands this changed its character, it developed from the activity of choice into an organic process, a vital tendency which thrusts itself up from the dark regions of life into consciousness, and exhibits itself as a ceaseless striving which the intellect does not fully comprehend, which it may even recognize as having no reason, and so condemn pessimistically as the inevitable movement of an impersonal Force. In so far as this was a philosophy, we shall take the liberty of ignoring it and limit the account of it to those points which concern its relation to contemporary science and to later thought.

On the philosophical side there were many sources from which might be drawn inspiration for a fresh exaltation of the Will Leibniz obviously could be drawn upon for the conception of impulses preceding and determining clear consciousness Reid was actually taken by some to have taught a form of intuitionism which could be called psychological vitalism, and Hume's reduction of mental life to a sequence of beliefs implied the priority of active belief over intellectual calculation On the scientific side the vitalism of the school of Montpellier (Bordeu, Grimaud, Barthez) was opposed to both mechanism and Stahlian animism, life, they declared, was not explicable either as mechanical or intellectual (i e consciously teleological). For this school life and instinct were closely connected; both were forms of spontaneity, aspects of the mystery of life; and instinct played in natural history the part which was assigned in physiology to the vital principle Schelling made this spontaneous life-principle cosmic, a development greatly assisted by the discovery of electrical phenomena and the misunderstanding of "animal magnetism" The romantic tendency of the period was a source of strength for all theories of this kind. Genius was felt to be something over and above mere individual activity, something expressive of the cosmic in man. Against the romantic tendency to drag in a cosmic spirit two other factors were operative. One of these was the recognition of centres of consciousness lower than the brain, an idea already met in Cabanis and more fully evolved by Bichat. The other was the evolutionism of Lamarck, which gave a racial history to individual characteristics and made the development of the organism dependent on psychic impulses. Combining these various but convergent thoughts, it is easy to see that it was possible to regard the thoughts of the individual as a narrow sphere of intellect resting on a broad basis of unconscious growth and construction. If to this is added the interest in Eastern philosophy which began from 1800 and for a time made the Vedanta quite the latest thing in philosophies, we have the sum total of the external factors which controlled the work of Schopenhauer. The internal factors of upbringing and disposition cannot be ignored in the case of one who thought philosophy was a function of temperament, but they are to be found in the accounts of Schopenhauer's life.

We should not require to discuss Schopenhauer if we had nothing to mention except his speculative metaphysics. Of that part of his work little need be said, the Kantian concept of the self as the source and bearer of phenomena is converted into will, the indefinable is thus defined, but as this is not volition, being the presupposition of all volition, it is soon declared to be Will-in-itself, and so passes out of the reach of psychology. Though the system constructed by Schopenhauer thus tapers away into impossible concepts, its point of view brought into relief some fruitful ideas. The philosophic mind tends frequently to value the processes of thought overmuch, it puts its view of knowledge in the place of actual activities and regards rational conduct as necessarily a product of reason. But the character of an action is not necessarily the same as its cause; instinct, for example, may lead to action that is rational in its methods and results, though not in its origin. The relation between intelligence and intelligible conduct is not a known quantity, but a problem.

If Schopenhauer was hasty in asserting that Will was the right name for the ground and root of all things, he was freed by his own act from the overestimation of intellect. The phenomena of animal behaviour suggest (to any but a Cartesian) that there may be forms of action that achieve rational results without conscious processes of reason;

below the animals there seem to be various degrees of life in which activity is less and less associated with intellectual processes, until at last the line is crossed and we come to the inorganic and to simple motion. This inverted evolutionism moves from intelligence to force. By calling force "blind will" it obscures its illogical transition, but cannot wholly veil the movement. We cannot get back again from force to will, nor from the blind cosmic will to the individual act of choice. Yet, for all that, there may be some profit in the point of view; and it may be admitted that Schopenhauer has given a new impetus to the search for the relation between the span of conscious purposes and the obscure factors that dictate our choice. A summary of the strong points in the position will show how far this attitude is worth considering.

The doctrine that we only know phenomena is not rejected by Schopenhauer. Normally we have before us in thought only a part of the total possible contents of the mind. Knowledge is thus a limited part, a section of the whole being that lives and acts. The whole self, if it has an active unity, is identical with the whole sum of forces that drive us on from moment to moment. In other words, there is an impulse that escapes our notice, continually emerging into consciousness, but as a whole remaining below and beyond the span of intellectual comprehension. As some had declared the "Thing-in-itself" to be the organism, Schopenhauer declares it to be the vitality resident in the organism. His view is thus biological, where it is not merely metaphysical; when he proclaims his own originality he is justified if we think only of modern tendencies, but in everything but its language and its excesses this view is a restatement of Aristotle's doctrine of the fundamental conation, persisting through all the scale of organic life, variously combined with and modified by corresponding degrees of conscious realization.

Metaphysics apart, we owe to Schopenhauer an important element in modern thought, the restoration of the will. The recognition of the will has steadily grown since he wrote his most famous work; the view flourishes now in the various theories of the will to power and the will to believe. But we must pass from this subject because Schopenhauer never descended from his loftier speculations to consider the will in a scientific psychological manner. Instead of that, he made speculative excursions into topics closely allied to his main theme and furnished new suggestions for the psychology of ethics and æsthetics

The historian of philosophy finds Schopenhauer's system dull; it is infected with Eastern nihilism, and may be criticized as based upon a confusion between will and intellect The psychologists, such as Ribot, find in Schopenhauer neither system nor dulness; they forgive him his metaphysics and dwell admiringly on his insight into nature and his subtle analyses The whole trend of Schopenhauer's interest is toward the most fundamental impulses of the animal nature With none of the cynicism of the eighteenth century he takes up the theme of love in the frank spirit of the unsophisticated Greek. Plato, in the *Symposium*, had sketched a theory of sexual attraction and hinted that it owed its strength physically to the nature of human beings, metaphysically to the purpose achieved through its agency. Aristotle ranked the sexual impulses with the desire for food and drink, a triad of innate forces which permeate the whole structure of the rational being. Those who still think of intellectualism as the real psychological doctrine of the greatest Greek thinkers might reflect for a time on the place they gave to the passions when they spoke of the earthly life and not of the last things This lost stream of naturalism, after centuries of subterraneous persistence, wells up again in that essay which Schopenhauer called his "pearl."

At this point we emerge from the metaphysics to the full light of experience. When he is of most value, Schopenhauer stands exactly where Kant stood, his statements refer to "phenomena," and his position is "anthropological"; he does nothing to solve his original problem, because his ultimate "Will" is a blind spot; he derives nothing from his metaphysics except a guiding principle that might have been reached from observation, and his views on the departmental topics of ethics and æsthetics can be accepted for their real worth, with no reference to a cosmic Will.

§ 4. All the doctrines of the early nineteenth century seem to have been obsessed with the ideas of the Philosophy of Identity; they seek a formula which will be true of man and the world, such as Reason or Will or Motion. Psychology accordingly continues to be an application of some comprehensive statement to such phenomena as the writer had in hand or selected for their suitability. The credit which each writer acquires is very incidental, the truest remarks are often elements of a systematic argument rather than independent observations The Hegelians continued to use the term Psychology for the "Science of Subjective Spirit," as e.g Rosenkranz (*Psychology*, 1837). J. E. Erdmann's works (*Outlines of Psychology*, 1840; 5th ed 1873, *Psychological Letters*, 1851, 5th ed 1875) are now best known because they are named in that writer's *History of Philosophy*[1] The same applies to Michelet's *Anthropology and Psychology*, Julius Schaller's *Psychologie* (1860) and several other works even less important A consideration of the contents of these books would only serve to show that they perpetuated unduly a line of thought for which psychologists were no longer grateful Among the Hegelians of 1830 Paul Wilhelm Jessen[2] deserves special mention as a (relatively) independent writer (*Beiträge*, 1831 *Versuch einer wissenschaftlichen Begründung der Psychologie*, 1855)

Among those who adopted another leader than Hegel the most important were Fortlage, who expressed the view that Fichte could be brought up to date, and J H Fichte, who also followed the lead of the elder Fichte Fortlage was the author of a system of psychology as an empirical science in two volumes (1855) and various *Psychological Lectures* In this department of thought Fortlage recognized the pre-eminence of Herbart, and more particularly of Beneke In 1844 Franz Exner published his attack on the Hegelian psychology and the influence of this champion of Herbart was permanent. Fortlage reflects this tendency; beyond that he did nothing of importance. J. H. Fichte wrote a *Psychology* (1864), which was also inspired by the belief that a study of man (as a basis he had written an *Anthropology* in 1856) must precede the speculative construction. Unfortunately the basis was itself highly speculative. Some idea of the psychology typical of this period among the spiritualistic writers may be gathered from the discussions in this book, which deals with the corporeal expressions of spirit, the destiny of man, the ethereal inner body, and the superhuman elements in artistic inspiration and genius. If we find the materialists violent in their language it is helpful to know what they had to suffer from the "psychologists"—though Fichte seems to have been moderate in comparison with Frohschhammer, a professor of theology and philosophy, who started (not without a personal bias, perhaps) from the idea of a Universal (cosmic) Fancy, a principle by which God produced all things and by which man also produces all things, including his own organism. A more sane production was the *Lehrbuch der Psychologie* (1854) of Leopold George, which contains some isolated points of value. But the systematizing spirit overrules these tendencies and the work is cast in the dialectical form of a ninefold evolution out of Nothing.[1] A large part is played by motion in this curious mixture of sound sense and cosmic rhythms—so large, in fact, that one might seem to be reading a physiological introduction to psychology until the artificial character of the exposition is grasped. Alone of all these writers George is referred to later as having made a contribution to psychological theory which deserved to be refuted.

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[1] See Erdmann, *History*, vol iii 121, § 344.

[2] Considering the date of this work, the remarks on Memory are interesting (p 478). Memory is a general property of the nerves A memory can be ascribed to lifeless things—if solid. "Memory" is ascribed to musical instruments "Paths" are formed ("as the ancients said"). Habit and skill have same basis.

The panorama of history must have its lights and shadows. If, in these last pages, time and patience have been unduly exhausted in reviving the names of men about whom nothing of profit could be recorded, there is the justification of necessity. The year 1860 is not far away, the last "new psychology" is still flushed with its triumph over the old; the unwary reader of titles is apt to think at once of antiquity or of the Middle Ages as the vanquished spectre, while the real enemy to be overcome was not the spirit of the Greeks, nor even the spiritless formalism of some mediævalists, but the more elaborate and more sinister genius of the nineteenth century. The psychologists had to unlearn their Hegelianism and get a new apprenticeship to their business before progress could be made. The mere physiologist could not help, nor was his materialism to be preferred before spiritualism Speculation had to wait on science that both might be enriched, and here, therefore, our narrative must go back to watch the development of the required sciences, after which the original theme can be resumed.

PART II

MODERN PSYCHOLOGY

CHAPTER I

GENERAL SCIENTIFIC TENDENCIES

§ 1. DURING the early part of the nineteenth century a slow but certain development of science prepared the way for many achievements and many fresh developments which actually appeared at a later date The influence of this period in the history of the sciences is seen in those recent standard works on psychology which begin with an exposition of physiology It will be necessary now to give a brief statement of the way in which the two great divisions of the world—nature and man—were drawn closer together, and finally attained an appearance of unification.

Vague suggestions of such a result can easily be traced now that the end shows more clearly the significance of the earlier work. Newton, for example, had combined the physical and the psychic in his treatment of optics ; but the physical aspect was emphasized almost to the exclusion of the psychic factors. Locke, on the other hand, utilized the method of science in the study of the mind without actually raising the specific question of the relation between body and mind. Empiricism, with its exaggerated estimate of sensation, was never far from the actual point of union between the outer and the inner , yet it produced for a long time no attempt to solve the problem of that union. The French enlightenment went a step further in the way of assertions, and La Mettrie made some observations that suggested the close dependence of psychic events on physiological conditions. Here the real defect was in the spirit of the writers ; they were controversial rather than scientific, and no definite statement of a programme was made before Cabanis. "In order," said Cabanis, "to arrive at a correct idea of those operations from which thought arises, we must consider the brain as a particular organ, destined especially to produce it, in the same way as the stomach and the intestines are there to perform digestion, the liver to filter the bile, the parotid, maxillary and sublingual glands to prepare the salivary juice." In spite of its materialistic tone, this was no more than a clear statement of the necessity for a better understanding of cerebral physiology as at least a basis for the study of human behaviour.[1]

The influence of Kant partly retarded and partly assisted the subsequent movement. The analysis of thought, as treated by Kant, seemed to demand only that inner movement of reflection which ran its course in Fichte, Schelling and Hegel. But from another point of view Kant's method and results stimulated interest in the senses, whilst Hegel's work was destined to produce in Germany a widespread conviction that idealism had much to say but little to teach. During the decade that followed the French Revolution Paris became the centre of scientific progress; Napoleon understood the importance of knowledge and encouraged the work of the various academies, reserving his disfavour for the ideologists alone. To this period, the dawn of the nineteenth century, belonged the great pioneers of science—Lavoisier, the founder of inorganic chemistry; Lamarck, father of the evolutionary conception of nature; Bichat, who began the modern anatomy of tissues; and Cuvier, whose *Leçons d'Anatomie Comparée*, are reckoned the foundation stones of that science.

The condition of the medical sciences at this time seems to have been highly unsatisfactory. The physicians had acquired the habit of believing that they had to deal with occult forces, and that no further progress could be made in understanding the phenomena of life. The belief in a special "vital principle" was the expression of this pessimism; combined with the passive acceptance of a superficial theory of method there was also an active opposition to the intrusions of chemistry and physics into the sphere of human life. Meanwhile physics and physiology continued to progress, and gained finally the recognition due to them.

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[1] Cp. Schopenhauer's version: "Ein denkendes Wesen ohne Gehirn ist wie ein verdauendes Wesen ohne Magen." See vol. ii. p. 378 of this work.

The progress of psychology was deeply affected by that general development of the scientific temper which was so marked a feature of the nineteenth century. More than any other department of inquiry, the sphere of psychology was liable to be invaded by primitive and emotional interests which hampered its progress Among the effects of the work done during this century must be counted as by no means the least important that moral evolution which, by transforming prejudices, created a new environment for disinterested workers. From this general development of the Western mind we pass on to the specific points in which psychology is related to other sciences. The subject is large, and the space available for it small, there will be much to omit and much to condense; but nothing could justify a failure to point out the subjects which everyone interested in psychology can follow more adequately elsewhere. To simplify this part of the narrative an indication of its purpose and scope will be given

Without arguing the rights or wrongs of the case, the historian has to accept the fact that a modern psychology frequently, not to say usually, lies between two points · it emerges from anatomy and physiology, and it terminates in a region where those sciences cease to guide. The purpose of this chapter is to indicate the points at which the study of the mind has historically been in contact with sciences of the body or of nature in general. These will be found to be as follows (*a*) The study of the brain as the organ of conscious action, which moves from a rough outline of its complexity as equivalent to a system of faculties toward a refined analysis of its structure in relation to more refined conceptions of function, the whole being a history of the problem of localization, (*b*) the study of the nervous system as a whole, (*c*) leaving the regions of anatomy and physiology, we then pass to the allied sphere of the experimental study of such functions as touching, seeing, hearing; (*d*) this involves considering the progress of physics as instrumental in researches upon the senses; and (*e*) leads to the subject which forms a limit to our scope, the field of mental pathology. It will be obvious that in all these discussions the guiding line is the progressive refinement of method and result. For example, descriptive anatomy begins with the brain surface and terminates in a study of levels and of structure, giving rise to histology; neurology advances from broad distinctions to the difficult problems of the neuron; psycho-pathology emerges as the last phase of a history that begins with chained maniacs and stops (for the present) at the subtleties of hysteria. The history of psychology, which will follow this groundwork, will be essentially the history of a similar refinement, often dependent upon the changes of opinion which science has suggested or made possible.

§ 2 A general localization of functions in the brain was attempted at a very early date This was transmitted through the Middle Ages to modern times, losing its influence in the seventeenth century through the predominance of a kindred topic—the seat of the soul The writers of the eighteenth century remained under the influence of this idea of a "soul," and made few attempts to deal with the higher functions of the intellect from the point of view of physiology or anatomy. The subject was therefore almost untouched when Gall and Spurzheim (1805) produced their ambitious attempt to distinguish and locate faculties numbering in all thirty-five This "Cranioscopy," afterwards called "Phrenology," was more allied to physiognomy than to anatomy or physiology, and may be classed as a transition from such a doctrine as that of Lavater to the later experimental study of the cerebral structure The distinction of faculties was crude The comparison of different cranial formations, from which the localization was deduced, can only be described as still more crude Neither the method nor the result was received with favour in scientific circles, though some great medical men supported them In England and America it was made popular by the work of George Combe (1788–1858), still treasured by hopeful parents, who expect to attain a prophetic knowledge of their children's abilities from an examination of their "bumps."

In spite of his unfortunate cranioscopy, Gall was an able anatomist, and credit is due to him for studying the brain and for insisting on the importance of establishing relations between cerebral structures and psychic functions, The great opponent of phrenology, Flourens, is the best witness to cite, he testified to Gall's skill as an anatomist, and declared that the proposition, "the brain is the exclusive seat of the soul," was to be found in science before Gall, "but one can say that since Gall it reigns there." Gall said of himself "I leave unsought the nature of the soul as of the body. . . . I confine myself to phenomena." Lewes (*History of Philosophy*, ii 414–54) devotes a long chapter to Gall, and while fully admitting the ultimate failure of his work, declares that his method and outlook were the beginning of a new era. In brief, Gall effectively overcame the lingering tendency to isolate man from nature, "he concluded that the mind consists of a plurality of functions, a plurality of organs became the necessary corollary of this proposition as soon as the relation between organ and function was steadily conceived" By way of contrast, Lewes quotes from Sir W Hamilton the assertion that "no assistance is afforded to mental philosophy by the examination of the nervous system, and that the doctrine or doctrines which found upon the supposed parallelism of brain and mind are, as far as observation extends, wholly groundless." This view, by far the more popular at the time, was made more vicious by a readiness to admit that such a parallelism was tenable in reference to the "lower functions" and in the case of animals. Hamilton's view was not so absurd as Lewes makes out, it was just as natural to reach that extreme from the subjective point of view as it was for Gall to reach the opposite extreme from exclusive attention to the brain. For Gall's method was spoiled by disregard of subjective analysis and a consequent ignorance of the very functions which he ascribed to the brain Even the study of the organs was left undeveloped, but the current tendency to assign all kinds of physical results to such a faculty as "imagination," without further inquiry into anatomical relations and physiological properties, was decisively checked. The opposition developed along the lines of psychology and anatomy. Herbart opposed the phrenologists on the ground of the unity of mind; Flourens, on the ground that the cerebrum itself is a unity. The latter position could be maintained or refuted only by observation and experiment;

it became accordingly the centre of a long struggle between the most eminent anatomists.

It was characteristic of the earlier stages of the discussion that a few experiments should be regarded as giving results universally valid. Flourens (1794–1867) made skilful experiments on the brains of pigeons (1822–4), and came to the conclusion that all reflexes were maintained after removal of the cerebrum ; that all thought and volition was a function of the brain as a whole, and that there were no distinguishable "centres." This was a very natural result to attain, for several reasons. In the first place, it is extremely difficult to say exactly what effect is produced by a surgical operation on so complex a structure as the brain, the excision of a part may not have been complete, or it may have produced collateral effects by causing inflammation or degeneration of other parts ; while the necessity of waiting till the wound has healed introduces all the possibilities of redevelopment in the area excised, or of vicarious activity acquired by another part The possibility of vicarious action, such that any function temporarily lost might reappear if sufficient time was allowed as the acquired function of some other part of the brain, was for a time the strongest point in favour of Flourens, chiefly because it afforded an explanation of the recovery of functions even when that was due to inadequate operations on the alleged centres

The original craniology of Gall was followed by the modified localization theory of C G Carus and Huschke. This, like its predecessor, was based on a faculty-doctrine, though in a refined form The faculties of ideation, sensation and volition were taken to be the fundamental psychic divisions, the forepart of the cerebrum was allotted to the first, the middle portions to the second and the cerebellum to the last Apart from differences of terminology and a more extensive knowledge of the appearance of the brain, this did not differ essentially from the doctrine of Galen and his Arab followers. This doctrine, held up to 1850 by Carus and Huschke, was succeeded by the teaching of Flourens, which held the field up till 1870.

One of the earliest and most famous attempts to assign an area of the brain to a function was made by Bouillaud, a disciple of Gall. Cases of aphasia (loss of the power of speech) had been described as early as 1742, but the honour of first studying the facts and connecting them with a lesion of the brain belongs to Jean Baptiste Bouillaud, Professor of Clinical Medicine at La Charité, Paris.

In 1825 this professor declared that the frontal lobes were the parts mainly concerned with speech, but, in spite of the 114 cases quoted to support the view, it is generally thought that Bouillaud was misled by his own ideas on phrenology. In 1833 fourteen cases were recorded by Andral which did not support Bouillaud, and his ideas were temporarily eclipsed until "in 1836 Dr Marc Dax called attention to the great frequency of loss of speech in association with right- rather than left-sided paralysis" As *right-sided* paralysis would indicate lesion of the *left* hemisphere, Bouillaud found a new supporter in Dax. Lastly, in 1861, Broca definitely announced that loss of the motor power of speech was due to lesion "of the posterior part of the third frontal convolution of the left hemisphere" This disease he named "aphemia", the term "aphasia" seems to have been introduced by Trousseau The subject was studied by Hughlings Jackson (1864), Bastian (1898), Karl Wernicke and others Broca's aphasia consisted essentially in loss of the power of speech, and was regarded as a loss of motor power Wernicke distinguished another type distinct from this motor aphasia, namely, sensory aphasia—i.e. loss of power to identify the auditory words, the individual being able to talk much and badly. Wernicke localized the area affected in these cases close to that indicated by Broca. Matters were now more complicated. Sensory aphasia is a defect of mental power, and might be regarded as a mental disease coinciding with a defective connection between the cortical and the subcortical motor tracts. This subcortical motor aphasia goes by the name of anarthria, and has been described by Déjérine and Bastian

An important aspect of this problem is the way in which it led to a fresh conception of the complexity of action. Kussmaul (1876) divided sensory aphasia into verbal deafness and verbal blindness. Charcot enumerated four types, adding to motor aphasia, verbal deafness and blindness the state called agraphia. This requires that we should think of a word as analysable into four elements—the auditory, the visual, the graphic or schematic and the articulatory.[1] With this goes the important point that individuals differ in their tendencies to emphasize one or other of these aspects—a principle that has been applied to the sphere of memory, where it is found that some people remember sounds rather than forms (visual impressions), others recall what is seen rather than what is touched. To this we owe the valuable distinction of mental types, as James puts it. "In some individuals the habitual 'thought stuff,' if one may so call it, is visual; in others it is auditory, articulatory or motor; in most, perhaps, it is evenly mixed." The types are denoted as visual, auditory, tactile and motile (*Principles*, ii. 60)

Though strongly supported, the theory of Broca was not unanimously accepted at any time. Trousseau doubted its absoluteness, Bernheim (1894) maintained that the various centres were fictitious, and the whole matter could be reduced to lack of co-ordination between the higher and lower centres, Charcot[2] and Pitres noted cases of aphasia in which Broca's centre showed no lesion But the great year of trial for the whole question was 1906, when Marie and Monakow independently reached conclusions that vitally affected the whole status of the problem In the main Pierre Marie's contention amounts to a rejection of that psycho-physiological view of language which (after Wernicke) divided the "inner language" into images which were either verbal, auditory, visual or motor, assigning a different centre to each. He asserts that in all cases there is a general decrease of intellectual power, and not a loss of one function without impairment of the general mental vigour; there may be cases of anarthria, or lack of power to produce the symbols (speech, writing) which express the ideas, but this is not true aphasia; the essence of aphasia is not a specific lesion, as Broca thought, but a general mental defect which cannot be localized as Broca localized it, though the evidence tends to prove that the disturbance is connected with Wernicke's (intellectual) area.

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[1] Note, p. 312. What Broca did *for* speech Marcé did *for* writing (agraphia). *Vide Traité Pratique des Maladies Mentales*, 1862.

[2] Charcot expressly names Hartley as the source of his ideas. See *History of Psychology*, ii. 284.

A second era in the study of the brain began from 1870. Electricity had then become available as a means of stimulating definite areas, and in consequence it was possible to experiment on the cortical surface to discover the specific relations between various tracts and the functions which depended upon them The principal names of this period were Fritsch and Hitzig, Ferrier, Munk, Horsley, Schaefer and Beevor.

This was not a return to the phrenological doctrine, because it was no longer an attempt to equate brain areas with faculties, the scientific character of the inquiry was vindicated by restricting the problem to the purely experimental basis, and collecting the reports on various operations which seemed to show that specific areas when electrically irritated produced specific actions; conversely, by the method of agreement and difference, excision of these areas would logically be followed by inability to perform the same functions Fritsch and Hitzig, anticipated in part by Hughlings Jackson, declared against Flourens (p 94) that there were motor areas in the cerebrum, but even then the results were not entirely reconcilable, and Goltz returned to the position of Flourens as regards the higher functions, though with many doubts and compromises

From this point began a triangular contest. Goltz, a pupil of Helmholtz and Professor of Physiology at Halle (1870–2) and Strassburg (1872–1902), maintained that Munk had gone too far in his geography of the brain he denied the possibility of ever attaining such an accurate plan of circumscribed areas as Munk tried to evolve. This amounted really to the maintenance of different hypotheses - Goltz championed the hypothesis of the unity of the brain; Munk that of its divisibility and plurality. Both were far too scientific to suppose that a hypothesis was more than a working principle, it was in both cases a definition of a general attitude, and the whole controversy shows a most creditable readiness to accept facts, when undeniable, from the opponent. The inconsistencies which resulted were not so much a weakness as a strength, for they arose from the continuous acquisition of fresh data and the consequent desire to attain more adequate hypotheses. The third party to the struggle was the Italian school, chiefly Luciani and Seppili. Their work was guided by the general conception of the brain as a complex of areas which overlap. In this hypothesis localization would be possible, but it could not be so definite as Munk maintained. Every centre or localized function is regarded on this scheme as having greater and less degrees of intermixture, so that the total area upon which a given function is dependent can be regarded as having a focus or centre and a fringe. This hypothesis clearly has the advantage of a mediating theory; it helps to explain many of the complications which arise from operations on the brain, and to give a reason for the agreements as well as the differences between the supporters of the two other hypotheses. Its value is only to be decided finally by the progress of direct investigation.

As it will not be possible to enter into this subject more fully, a brief indication of the main results will be given here. This will serve to show the general relation between physiology and psychology; it will be of use also in the later discussion of the problem of psycho-physiology and psycho-physics.

In 1872 Meynert, a physiologist of the Austrian school, described the structure of the cerebral cortex in a way that is still on the whole correct. The importance of Meynert's researches for the psychologist consists in his ideas of "projection areas" and association-fibres. The attempt to localize functions in the brain by experiments requiring extirpation was far from successful; it was followed and supplemented by a more developed method. The first part of this was the direction of attention to the point at which nerve-fibres enter the cortex of the brain; the second, begun most definitely in 1878 (by Bevan Lewis and Henry Clarke), was the examination of the structure of the brain with a view to distinguishing its strata—that is to say, the differences and relative positions of the tissues of which it is composed.

This tendency was part of a general movement. The earlier descriptive anatomy of the body was succeeded by the development of histology, including this histological analysis of the brain. Parallel with this work there has also been the evolutional study of the brain, a product of the comparatively recent science of embryology. This part of the work done on the brain is associated primarily with the name of Flechsig, who studied the exact stage at which myelinization takes place in the different parts of the cerebrum, and distinguished accordingly "projection areas," or sensory centres, from the later "association centres" At present a number of different methods are employed to define the nature of "brain as an organ of mind," to use Bastian's well-known expression. The study of the brain at different ages shows that the parts develop in a sequence, and this serial development can be equated with the corresponding acquisition or perfection of functions, conversely, loss of function can be equated with the condition of the brain if observed post-mortem, direct experiments on animals furnish collateral evidence in so far as comparative anatomy reaches to the functions of the brain. This last method was overworked in the earlier period, and probably also by Flechsig. From the very fact that man holds a unique position in the matter of brain development, it follows that the utility of observations made upon animals is limited, and the complex character of brain activities, with the possibilities of educating the centres, has militated against the acceptance of Flechsig's results, which, it is said, he wrongly asserted to be true of the adult brain after observing them only in the immature stages

§ 3. Considered structurally in relation to the body, the brain is a complex union of nerves. The structure and workings of the brain can therefore be understood only in proportion as the nerves are studied The most important event in the early history of neurology was the discovery made by Dr., afterwards Sir, Charles Bell that the nervous system is dual in character. The discovery seems to have been made in 1807, published in 1811 in an essay entitled *An Idea of a New Anatomy of the Brain*, communicated to the Royal Society in 1821, and finally stated in a work on the nervous system in 1830 Bell announced that the nerves connected with the spinal centres by anterior roots are employed in conveying motor impulses from the brain outward, from the posterior roots spring the sensory nerves This was further demonstrated by Magendie in 1822, and established as the distinction between efferent and afferent systems Bell afterwards showed that the cranial nerves also fall into two distinct classes, so that a dual system was proved to exist in the brain and definite courses for efferent and afferent impulses could reasonably be looked for.

The next most important step was taken by Marshall Hall (1835), following Legallois (1811), and associated with Johannes Muller, who added experimental verification (1835) The possibilities of reflex action had been lying dormant since the time of Descartes, though a few observations on the movements of decapitated creatures are recorded. Legallois (1826) and Flourens (1837) established the existence of a respiration-centre, thus giving a physiological supplement to the work of Lavoisier. The significance of the movement was shown in the work of Marshall Hall ("The Reflex Function of the Medulla Oblongata and Medulla Spinalis," *Philos Trans*, London, 1833), which finally rejected all but the mechanical elements in reflex action, and clearly showed that it is distinct from conscious volition. The doctrine of reflexes played a large part in the evolution of opinion from 1840 to 1870. That complete and apparently purposive actions could be carried out by "spinal" animals (i e animals deprived of the higher brain structures) was a fact immediately discussed in all its bearings, both scientific and sentimental. Whether such actions are purely mechanical, or indicate that the lower centres have a consciousness of their own, was to be for many years a question hotly disputed. Just as the ancients had been puzzled by the fact that some animals could be subdivided, and have as many "souls" as they had parts, so the moderns were for a time astonished at the prospect opened up by this conception of centres which belonged to man and yet did not live in the watchful eye of his Free Will. Meanwhile the more scientific aspects of the question were followed out, and a group of well-known physiologists (Purkinje, Remak, Henle, and Müller) added continuously to the sum total of knowledge about nerves

During the earlier period attention was directed chiefly to the muscular system, and to those reflex actions which consisted in adjustments to external stimuli A new turn to the question was provided by Claude Bernard in 1851 This famous teacher of physiology opened the way for many discoveries that have thrown light on the relation between neural activity and such organic processes as nutrition or secretion. In particular, Bernard studied the condition of the bloodvessels when the sympathetic nerve was cut, and his observations coincided both in time and nature with those of C E Brown-Séquard and Ludwig To these three principally we owe the present developments in the sphere of vascular neurology—that is to say, the progress made in the study of the influence exerted by specific nerves (vasodilator, vasoconstrictor) on the bloodvessels, and the consequent changes which may be produced throughout the body by the sympathetic system This has become an important chapter in the book of knowledge about human life For the viscera and all the " inward parts " are directly or indirectly connected with the brain Not only may the internal states produce changes in the nervous system which affect perception, memory, and thought, but also perceptions, memories, and thought seem able to transmute their values into bodily changes How these data are useful in psychology will best be seen in considering theories of the emotions (p. 174) When the phenomena were regarded as truly reflex, and consequently action arising at one point of the system might produce effects at another, the complexity of the problem was increased. In particular, all the problems of inhibition were brought into greater importance, for the application of a stimulus was found to produce contrary and paradoxical results, from which have been derived theories of " antagonism " and of inhibition due to " drainage " That lower centres should be controlled by higher centres is obviously important for all development of conduct, and the subject of " central inhibition " was taken up by Setschenow, who thought that it was possible to determine an "inhibitory centre" in the brain. Since that time the tendency has been to study correlation and coordination rather than pursue the search for "centres." As science advances it becomes more and more necessary to think that the real "organ of mind" is the body.

The distinction of higher and lower centres, as used above, recalls the fact that in the decade after 1860 Spencer's evolutionary formulæ came into fashion. Among those who used it effectively must be named Hughlings Jackson He recognized in the nervous system three levels of evolution, and assumed that the nerve-centres have the function of "representing" every part of the body. The levels are characterized by different degrees of specialization, an idea derived from von Baer, and by degrees of complexity, as conceived by Spencer The lowest level has direct representation of impressions and movements (sensori-motor), after this (automatic) stage comes a second level, in which the earlier representations are re-represented, subserving increased complexity, specialization, and integration; the highest level is that of the cortex (excluding specifically motor areas), and its function is re-re-representation in the highest synthesis which makes possible thought and volition The nature of this evolutionary scheme is tersely expressed by saying that it postulates progress from the less to the more organized, from the automatic to the voluntary. It is a scheme intended to have reference to the nervous system only; consciousness, when it occurs, is a parallel phenomenon which merely accompanies neural process.

Another important theme is the development of the neuron theory A beginning was made by A. V. Waller, a Kentish physician, in 1850, with the observation that when a nerve is severed the part furthest from the cell degenerates, while that which is attached to the cell recovers; from which it followed that the cell supplies the nourishment and constructive power of the nerve-fibre. In 1858 Joseph von Gerlach, of Mayence, began to employ a solution of carmine for staining sections, and so made distinct the central nerve-cells lying in the brain substance. The later methods of Weigert, Golgi, Ehrlich, and Nissl are extensions and variations of this method. The result is the modern conception of nerves. In theory this originates from the wider doctrine of cells as it was taught by Schwann and others, and originally appeared as a description of nerve-cells The later form of the doctrine is distinguished from the earlier by incorporating and extending the work of Waller and of Virchow In place of the term "nerve-cell," it is now customary to use the term "neuron,"[1] to indicate the complex unit which consists of the ganglion cell, the axis cylinder, and the tree-like branching processes (dendrites) In principle, a cell is an independent unit of life, and it was therefore natural for the speculative psychologists to think that cells were equivalent to ideas, and that association between ideas had a physiological counterpart in the paths by which activity passed from cell to cell The "brain-paths" have had a long and honourable career as a picturesque "physiology of the higher processes," but that career is drawing to a close Matters are not quite so simple as that view suggests, and for the present there is a suspension of judgment and a desire for more details.

The original doctrine of reflexes, as stated by Marshall Hall, was the basis of many hopes that all relations of outer and inner might be solved in some analogous fashion But Hall was not right in supposing that he could draw a rigid distinction between volitional and reflex processes More recent work (especially that of Sherrington) has shown that there is an interplay of these processes, and that the afferent and efferent currents are not mere "reflections" (as a ray of light might be reflected from a mirror), but are connected through a complex mediation which involves many nervous changes The original conception of reflex action has therefore been reconsidered and elaborated by the introduction of reference to different levels of neural activity and their integration in the "reflex arc," or, more correctly, "reflex circuit," for the sensori-motor processes are really, as processes, a continuous production of changes Similarly, the neuron theory has brought with it a considerable increase in problems awaiting solution, particularly that of continuity.

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[1] Waldeyer (1891) formulated the general theory of nerves, as it then was, and introduced this term.

The natural discontinuity of a cell system is somewhat modified by the presence of those extensions which seem to reach out from cell to cell and establish contact But the contact cannot be assumed, it must be observed, and it is doubtful whether any such observation has up to the present time been achieved. From the psychological side, interest is attached primarily to the possibility of intermittent connexion. For if the physiological basis is to be taken as equivalent to any kind of psychic process, it should admit of breaking as well as making connections. Some have maintained that contact is established only in and through states of excitement, so that the excitation of a centre would be the occasion for union by contact with other centres—psychologically attention would condition association. Unfortunately, on all these subjects there is no unchallenged view and no final agreement. For the possible variations of opinion the reader is referred to the works of the neurologists, notably Golgi, W. His, van Gehuchten, and Ramon y Cajal. The continuity of the "sensorium" has been maintained by Held, Apathy, and Bethe, the intercellular bridges by Henson Nissl thinks the gray matter is a conducting medium, while Cajal was inclined to favour temporary contact by expansion

Finally, there are the problems which still belong to the sphere of conductivity. "What is it which is conducted along the nerve?" Any satisfactory answer to this question is extraordinarily difficult There is no visible motion of the nerve; no pull or push is exerted through it, no "animal spirits" circulate rapidly through it to constitute the nerve impulse. The solution of these problems, if it were possible, would not come within the scope of our history It must be enough to point out that this is the logical terminus of the evolution If we grant any psychological value to localization and to the finer anatomy of the brain, it is at least illogical to neglect the dynamic aspects of these structures. But at present very little can be said on this subject, and the work so far done can scarcely be given any meaning in terms of consciousness. Chemical analysis of the brain yields certain results of a purely chemical kind, of which perhaps the demonstration of the presence of phosphorus in cerebral matter is the most clear and important example. This has also had some popular vogue, but the motto of 1860 (without phosphorus no thought) has long passed into the limbo of untruths A new interest in the matter of "conduction" was aroused by the doctrine of "innervation," according to which the agent in voluntary acts could experience the expenditure of effort as a positive outflow of spiritual vigour. This was clearly the old animal spirits coming back The question dropped once more when it was shown that there was no psychological "innervation," but that all consciousness of activity was conditioned by the afferent, and not the efferent, currents.

This unfortunate lapse on the part of spiritual psychologists into a mystical doctrine of volitional energy has been partly the reason for the neglect into which the physiological problem fell There seems to have been continual confusion between the innervation as a fictitious outflow of will power and innervation as a demonstrable physiological fact Consequently, "academic physiology had heard the term 'nerve-energy,' but it did not use it, it left it to the manufacturers of magnetic belts or electric boot-soles" But the evidence for some kind of specific nerve-energy went on increasing, and led to statements of its possible nature "Dr Hale White was the first English writer formally to enunciate the doctrine of the objective reality of nerve-force, which he did so far back as 1886, when he coined the term 'neuro-rheuma,' or flow in a nerve Sir Victor Horsley and Dr Sharkey have concurred in this teaching"[1] A later and more elaborate theory has been stated by Dr McDougall, who links up the concepts of neurone and synapse with that of "neurin" Here we must leave the subject, for whatever may be said upon it could only be recited here if our annals were designed to reach the most modern times As this sphere of research is made extremely complex by the fact that electrical phenomena accompany neural conduction, so that possibly a combination of mechanical, physical, and chemical processes must be postulated for every total process, any brief statement of "facts" would be no more than misleading.

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[1] Quoted from O. F. Harris, *Nerves*, Home University Library, 1913. p. 108 *ff*.

We shall now return to the earlier period in order to trace the movements which resulted in new views on the nature of sensation, in particular of sight and hearing.

In 1833 Johannes Müller was appointed to a chair of physiology at Berlin. The establishment of this chair marked the recognition of physiology as an independent sphere of science, and from this point begins a long line of important contributions to physiology and to psychophysiology. Muller was a philosopher, as a thinker a worthy successor of Haller, whose *Elementa* was still the standard textbook, and was only superseded by Muller's *Handbuch* He was one of those comprehensive workers whose ideas seem to be fully expressed only by a generation of men; biology, physiology, and psychology began afresh from him, and his ideas were developed by such men as Schwann, Virchow, Helmholtz, and Du Bois Reymond His work marked the beginning of a new era in the history of science in Germany, for it checked that tendency to vague generalization which it was Hegel's misfortune to have stimulated beyond due measure. On the other hand, Muller was indebted to the philosophers for a general attitude toward science which was the opposite of narrow specialization and dogmatism. The great result of the philosophic movement in Germany was the production of a general belief in the unity of nature This manifested itself in a consistent tendency toward the union of distinct points of view The best example is that with which we are now most concerned, the union of the inner and outer through the combination of physiology (and later physics) with the earlier notion of psychology. We cannot do better than begin with the subject most prominently connected with Muller's name—the specific energies of the nervous system.

The term "specific energies" is used to denote the doctrine that a given nerve has one and only one kind of reaction to a stimulus. The optic nerve, for example, may be stimulated by light, by electric shock, or by a blow, but the result will always be of the same qualitative order—a sensation of sight. This doctrine has several interesting aspects. One writer has pointed out that from the earliest antiquity there had always been an assumption of some sympathetic bond between the object and the eye, or between the external process and the inner physiological process. "The real importance of what is called Müller's Law of Specific Energy is that it contains an explicit denial of any necessary qualitative connection or resemblance between the physical processes of stimulation and the psycho-physiological changes associated therewith in the sense-organ and 'consciousness'."[1] Helmholtz spoke of it as "the empirical exposition of the theoretical discussion of Kant on the nature of the human mind." This affinity between Muller and Kant is noticed by Wundt, who adds that the doctrine has a strong likeness to Kant's views on *a priori* forms of sensation. Mueller's opponents declared that this was really a doctrine of innate physical dispositions, and to it they opposed a doctrine of "indifference."[2]

Among Muller's many achievements are to be mentioned experiments on the sense of sight and on the action of the vocal cords; his theory of colour contrast and of colour sensations produced by pressure, and the researches on the Bell-Magendie doctrine of nerve-roots already mentioned (p. 100). Each of these studies was destined to expand in the ensuing thirty years, and they will be met again in their later forms. Here we shall follow the development of Muller's views on sensation and allied questions. Muller maintained that the nerves run from the periphery to the brain in such a way that the peripheral order and arrangement is reproduced in the brain; from which it follows that the stimulation of any area of the periphery is copied, or schematically reproduced, in the brain. This bears directly on the vexed question of the perception of space, which Muller thought was given by the nerves of touch, sight, taste, and smell equally; hearing was the only exception E. H. Weber subjected the problem of touch to experimental analysis, and made this subject peculiarly his own (p. 107). Muller, in addition to such subjects as instinct, gave special attention to the problem of visual sensation. In accordance with the general idea of "specific energies," Müller regarded the phenomena of light, darkness, and colour as dependent on the qualities inherent in the visual substance. This subjective treatment was the counterpart of the objective physical view taken by Newton (ii. 186), and was equally inadequate in its isolation. A complete theory of vision could not be deduced from this solitary proposition. Müller naturally adopted Goethe's views on colour, being compelled to stand by the immediate experiences in his analysis. He regarded visual perception of space as primarily dependent on an original consciousness of bodily extension. The subject has at first no perception of objects as external; the outer world is a product of experience. Similarly there is at first only a perception of space as having two dimensions, the equivalent of the retinal image and the stimulated points on the surface of the retina. The perception of depth is an element added by the progress of experience. Muller also was the first to give a satisfactory account of binocular vision, showing that there are points on the retina of each eye which so correspond that an object stimulating two corresponding points is perceived as one. This was established anatomically by tracing the course of the optic nerves and showing how the chiasma or crossing of the nerves provides for the union in a single result of two distinct retinal stimulations.

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[1] M. Greenwood, jun., in *Further Advances in Physiology*, ed. Hill, p. 387.

[2] See note, p. 313.

Mueller followed Kant in regarding the idea of space as immediately given; it was developed, but not originally produced, by experience. The actual extension of the retina and the knowledge of its extension were taken by him as one original datum. The Herbartian psychologists did not admit this innate idea of space, but tried to give an account of its genesis. Herbart, and after him especially Waitz, felt the necessity of reducing extension to intension; the given sensations, they held, differ only in intensity, and therefore the only ground for the perception of space is a number of sensations differing in quality. Experience may be said to show that as the eye moves the sensations change in quality, for that which is clearest in one position becomes less clear in another, and a number of clear presentations then coexist with a number of partially clear presentations. These form a qualitative series, and both space and time are psychologically qualitative series. It is possible to reverse the series in some cases, namely those of space, and in this way space is distinguished from time. To Herbart belongs the credit of seeing that objective spatial order must be reached by psychology from a subjective series which is spatial in a different way. This theory will be reconsidered when we come to Lotze. Meanwhile it is necessary to remember that the retina is primarily a part of the whole sensitive surface of the body, and to consider what may be said about the rest of that surface, the skin

Sight is a special case of touch. While Müller at Berlin was dealing with the problems of sight, his great contemporary at Leipzig, E. H. Weber, was making discoveries about the sense of touch. Muller's pupils include Du Bois Reymond and Helmholtz; Weber was the master of Lotze. Taken together, they form one of the most remarkable groups of scientific workers the world has ever seen. During the years from 1830 to 1860 they contributed epoch-making discoveries to such different sciences as physiology, physics, medicine, and psychology, while the last added a new chapter to the history of philosophy. The physiology of touch, it has been said, began with Weber[1] The vague idea that we know the spatial extension of our bodies was put to the test of experiment by Weber, with the result that he discovered the need of a certain distance between two points subjected to pressure before the points could be perceived to be two and not one. Further investigation showed that the required distance was different for different parts of the body, and a number of experiments were made by which the fineness of this sensibility was determined for each part.

The physiologists did not agree among themselves as to the explanation of these facts in terms of structure and nerve-endings. That, however, does not concern us. The psychological aspect of the matter, the perception of space by touch, was passed over by Weber, who believed that sensations never give immediately an idea of space; they are only the occasions which bring into action that innate power by which we perceive things spatially. The field was left open to the psychologists, and the Herbartians were ready to supply a theory of tactual space, in principle the same as that given for visual space. The experiments of the physiologists and the deductions of the metaphysical psychologists thus remained disunited, if not discordant

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[1] See p 107 above

Herbart and Waitz deduced the spatial order of perceptions from the unity of the soul and the consequent struggle which it makes to preserve that unity, ending in series of presentations more or less repressed (*vide* p 57). George supplied another element by laying emphasis on motion, asserting that externality and position in an external world are due to reflection upon experiences of change due to movement.

The development of this subject reached a climax in Lotze's theory of "local signs." Lotze followed the Herbartians in one respect, he stood firmly by the doctrine that sensations differ qualitatively, and therefore extension as quantitative is translated into the language of quality when it is perceived The problem as viewed by Lotze is purely a problem of order Space, as some great receptacle of things, is left entirely out of view The general problem of a space, and the question whether this is perceived or not, is simply left untouched Lotze probably saw that the troubles into which Kant's followers had fallen were due to beginning at the wrong end, and discussing space before properly settling the question of spatial order. It was comparatively easy, after Herbart's work, to see that experience gives us sufficient basis for assuming that when we perceive two or more things, the plurality of the perceptions is equivalent to the perception that the objects are external to one another There are, of course, distinctions which are not separations we may distinguish the thing and its value without giving them spatial relations; but when we do separate we create spatial relations Lotze is clear that the question is primarily psychological, and he sets himself to show what must be given in order to explain spatial order as a fact of experience. In this Lotze frees himself from the limitations of the physiological treatment of sensations, and avoids falling into the particular metaphysical quandary of the Herbartians.

Müller, as we have seen, took over Kant's view of space, and did not profess to amend it. Waitz could be refuted in a sentence. If space is generated from the different degrees of strength which the perceptions attain, then two impressions on the same area with different degrees of strength would be perceived as being in different parts of space. Lotze starts from the fact that where there are perceptions of difference there must be differences to be perceived. If each area of the body has such a difference, each sensation will have a quality distinct from the sense of touch as such; there must be a nervous process corresponding to this difference of quality, over and above all the nervous processes corresponding to other characteristics of this experience (degree of pressure, pain, etc).

Lotze explains his theory by an analogy. If a person transferred the contents of a library from one place to another, he would first label each book; when he put them in their places, he would be guided by the labels, the signs of their spatial order (*Microcosmus*, III 2). The point of this analogy is in the fact that the actual space is irrelevant; a book is not in the same *space* when it is in a new library, but it is in the same *place* relatively. The value of Lotze's view depends wholly on this point. He maintains that the essence of spatiality for the mind is the recognition of a certain kind of order which is represented ideally by qualitative differences. The view is a part of Lotze's ideal-realism It has its difficulties, but it is acknowledged to be the best hypothesis which idealism can produce to explain space in terms of experience The objections of physiologists, that they cannot find the neural counterpart of these "local signs," would not affect Lotze, the relation of the psychological to the physiological data is such that psychology is justified in setting problems for physiology, saying to it that the function is known and the organ must be looked for. There are also other possible objections which can be brought against the theory, but its virtues deserve to be considered first. One point is particularly instructive. Weber, having discovered that two points of pressure are only distinguished as two when the intermediary space is sufficiently great, was then compelled to say that the consciousness of the points was accompanied by a consciousness of the intervening space which was *not* perceived. This unfortunate explanation was the most natural deduction from the doctrine that the perception of space as a whole preceded experience. Lotze could correct this. For if the points are distinguishable, their local signs differ; if the signs do not differ, they are not distinguished. An observer might see that what the person called one point of touch was really two; but the experience of the observer must not be confused with the experience of the person observed. But in some respects we observe ourselves, and if the whole question of localization is taken up, it will be necessary to consider how far the mature experience is complicated by remembrance of previous experiences in which the sense of sight and of movement may have co-operated. Lotze's theory sets no limits to the education of the senses which may be achieved in this way.

Lotze's theory was restated with greater detail by G. Meissner (*Beiträge zur Physiologie des Sehorgans*, 1854), and survives to the present day. But its rival also flourishes, and the details of the contest form a large part of the theory of spatial perception during the nineteenth century. The broad lines of theory, to which this sketch must be limited, were continually shaped by details of observation and experiment. The period from 1830 to 1870 might well be styled the classic period in the history of modern optics and the allied subjects. In 1834 W. H. F. Talbot, the inventor of photography, described the effect produced by a rotating disc with black and white sections: he formulated the law still usually called "Talbot's law."[1] The credit of the discovery was actually shared by Talbot with the Belgian, J. A. F. Plateau, who is also known as author of the method of differences (p. 135). In 1838 the researches and inventions of Wheatstone,[2] discoverer of the stereoscope, gave new food for thought, particularly on account of the way in which they showed the disparity of the visual images From then onwards we meet a number of names famous in the annals of science, as, for example, Brucke, Dove, Donders, Brewster, Listing, Volkmann, Chevreul, Nagel, Panum, Fick, Hering,[1] all of whom made one or more important contributions to the subject of vision The period came to a climax with Helmholtz, who summed up and co-ordinated the work of his predecessors. In 1868 Helmholtz gave his support to the local sign theory, and designated it the empirical theory of vision The essential elements of that theory were (*a*) difference between the sensations of various parts of the retina depending on their local difference, and (*b*) a capacity for learning the significance of these differences for purposes of motion and direction of action in the world of spatially related objects On the other side (nativistic), Hering maintained (1879) that the local sign or space-value is given to consciousness immediately, without the mediation of sensations of movements (Lotze) There the matter remains, so far as concerns the so-called empiricist and nativistic theories A third type of theory has been called "genetic," and may be regarded as a development from the Herbartian doctrine The difference between the various standpoints is not actually so clear as these nominal oppositions would suggest, and to a large extent the genetic theory is a compromise. On the one hand it rejects the purely nativistic argument, it relies, at the same time, on local signs as ultimate data, and traces the complete formation of the spatial perceptions to a process of fusion Wundt has elaborated these ideas, and Lipps supported a similar theory based on fusion without reference to movement That the whole subject is capable of another treatment seems shown by G E Mueller's article, "Ueber die Localization der Visuellen Vorstellungsbilder." He applies the method of the Wurzburg school, and finds localization to be affected by conditions and attitudes of the subject (*vide* p 282). This suggests that the earlier work was too exclusively physiological. Among recent writers a general dissatisfaction is the most obvious feature no definite explanation is yet attained. For example, Kuelpe reserves judgment, after rejecting the existing theories. W. McDougall (*Body and Mind*, p. 307) thinks "we have not advanced beyond Lotze" Stumpf and James take space as a primary datum. Ward and Stout employ the term "extensity" for the particular quality of a group of localized sensations which have implicit space order.

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[1] *London and Edinburgh Philos. Mag.*, Series 3, v. 328. Plateau published his *Dissertation* in 1829; also "Essai d'une Théorie Générale," etc., in *Mémoires de l'Académie Royale*, t. viii. and t. xi.

[2] C. Wheatstone, "Contributions to Physiology of Vision," *Philos. Trans.*, 1838.

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[1] For details see Klemm, Eng. Trans, p. 330

§ 5. Following the track of history, we have been led on from sight to touch, from touch to the problems of localization and space. Another topic occupies a prominent place in this period—the discussion of the visual sensations. In addition to what is known about the anatomy and histology of the eye, the study of visual sensations may be approached from the side of their stimuli (the Newtonian analysis of light) or their actual nature as experiences. It was the latter question that attracted Goethe's attention, and led him in 1812 to give a description of colour blindness. Goethe's interest in colour was mainly æsthetic; he was concerned with the actual sensations which could be experienced, and desired to find out what general feelings were associated with different colours, an interesting topic that might be profitably pursued From this point of view, black and white are to be reckoned as "colours," a view which came to Goethe directly from Aristotle Aristotle, Goethe, and Hering constitute one distinct line of investigators concerned with sensations as experienced

In 1819 Johannes Evangelista Purkinje, a young graduate in medicine from Bohemia, wrote as his inaugural dissertation a work on subjective visual phenomena (*Beiträge zur Kenntniss des sehens in subjectiver Hinsicht*), which attracted Goethe's attention Later he became Professor of Physiology and Pathology at Breslau, and until his death in 1869 continued to make valuable contributions to many different departments of science As a physiologist he is remembered as the first to use the term protoplasm, as the discoverer of the ganglionic cells in the brain and those fibres which bear his name; but he is to be mentioned here on account of his work on the subjective visual experiences which are caused by galvanic stimulation and on the relation between brightness of colour and intensity of light. The so-called

"Purkinje phenomenon" is the fact that with decreasing intensity of light the colours with short wave-lengths become relatively more visible. Green and blue survive when red and yellow fade "In a summer evening, for example, the green of the marshes may be seen against the blue of the sea long after the golden rod and tansy have lost their colour, and after the old red farmhouse has turned gray."[1]

Thomas Young was an extraordinary genius, a brilliant linguist, famous in physics as the author of the wave theory of light, an authority on the phenomena of tides, an expert Egyptologist, a decipherer of hieroglyphs—in fact, a prodigy. By profession Young was a doctor, with degrees from Gottingen and Cambridge, and a practice in London He has been called the "father of physiological optics," and it is as the first expounder of what is now called the Young-Helmholtz theory of colour-vision that he claims notice here[2] The possibility of reducing all colours to three fundamental colours and their mixtures was recognized before Young's time, his particular contribution (1807) was the suggestion of a physiological basis consisting of three sensation-processes assigned to three kinds of nerve-fibre independent in their action.

Young's theory remained as he left it until Helmholtz began the researches which finally appeared as the *Physiologische Optik* in 1867 Apart from its achievements in detail, this work of Helmholtz, together with that on hearing, gave a new impulse to all attempts at an interpretation of perceptions through analysis For Helmholtz was a man of philosophic mind. His father was devoted to the idealism of Fichte, the young Helmholtz saw the futility of that "nature-philosophy" which ruled the Germany of his youth; he spent his days and nights in the pursuit of knowledge, with a craving for exactness as the only salvation of the spirit, and in time medicine, mathematics, and physics became for him the means by which the inner world of thought might objectify and realize itself. This fact gives Helmholtz a place in the history of speculative thought akin to that of his teacher Muller, and not vitally different from that of the young Lotze. The attitude common to all these is that of the man who has a theory to apply, and is aware that his theory must wait on detailed investigation and inductive reasoning The theory formulated by Helmholtz was based on the belief that every sensation as it is immediately known signifies but never copies an objective fact. It is the task of science to discover and express in its own language that objectivity to which the subjective experience points An attempt to deduce the objective reality from the subjective movement of the spirit is, on this view, worse than absurd, in other words, Fichte, Hegel, and the "Naturphilosophie" were useless, not by accident, but by their very nature The "Weltanschauung" of Helmholtz has a grandeur of its own, it also proved fruitful in shifting the centre of interest from speculation without facts to speculation allied with experiment The two great fields in which Helmholtz worked—those of vision and hearing—are good illustrations of his theory, in both there are elements and factors which enter into experience, yet could never be deduced from experience without the aid of science

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[1] M. W Calkins *First Book in Psychology*, p 305. Hering explains this as a case of adaptation

[2] Bakerian Lecture, 1801. Here sensations of different colours are said to depend on different frequencies of the vibrations, colours chosen were red, yellow, blue afterwards (1807) red, green, violet.

In the particular case now under discussion the colours of any ordinary experience are found to be either mixed or pure The latter, stated by Helmholtz as red, green, and violet or blue, are to be considered as pure sense-processes, requiring therefore separate physiological bases described as nerve elements capable of one kind of activity only. The production of a colour sensation is, on this theory, to be ascribed to the activity of all or some of these three "fibres," each having a distinct kind of process, and responding to distinct kinds of stimuli (the different wave-lengths of the different colours in the spectrum analysis) For purposes of experiment a given stimulus is employed, complex in nature, a given sensation is produced, and it is assumed that the resulting perception of colour is equivalent to the physiological changes produced by the stimulus in the "substances" of the retina. For example, a wave-length R affects the substance R^1 alone, causes a neural process in the fibres leading to the visual centres, and produces the perception of a red object.

As this is not a psychological analysis, it is not open to criticism on that basis. Just as the painter learns to mix pigments so as to produce certain results, the physical experimenter learns to mix stimuli, and the physiologist adds a complementary theory of the processes that result from those stimuli as suggested by the structure of the visual apparatus If we ask what connection this has with psychology, we may say that it has none. But it is owing to work of this kind that psychological works have in fact changed their character and their contents The sensation, which is the real starting-point, is a psychological datum if we desire to know the relation of that sensation to the external world as it is known to science, this seems to be the way in which the gulf between subject and object can be bridged This desire is the source from which has come the intermediary science called " physiological psychology "

From the Young-Helmholtz theory of three colours, we may now go back to Goethe's four colours, and consider its physiological basis as constructed by Hering In its original assertion of six colours, this theory contained the old (Aristotelian) confusion of brightness and colour Hering distinguished the quality of brightness from that of colour, but retained the six elementary forms—namely, (*a*) white and black (toneless), and (*b*) blue, yellow, green, red (toned) A toned colour, says Hering, may be regarded as made up of four primary components, two toned and two tone free (black and white) This position is reached by taking the four toned colours as equivalent to two pairs (red-green, yellow-blue), one component of each pair coexisting with black and white " In any red-yellow colour —e g orange—we have accordingly to distinguish three bright, pure components (red, yellow, white) and one dark (black), but in any green-blue, three dark (green, blue, black) and one bright " Thus we get a " four-colour " theory, suggested by a physiological assumption of four substances which separately undergo constructive or destructive processes (anabolic, katabolic) set up by stimuli. The further consideration of this theory belongs to physiology, and is a matter of detail. At present there is no final basis for judging the two theories, and no way of deciding which school will ultimately prove to be right.

The necessity for a theory different from that of Young or Helmholtz arose from the fact that the physical doctrine of light affords no explanation of after-images and simultaneous contrast. This point, which Goethe emphasized, was elaborated in 1865 by Aubert (*Physiologie der Netzhaut*) in a theory based on four fundamental colours. Hering's view is regarded as a development of this teaching Almost at the same time (1866) Max Schultze declared that the rods of the retina function in perception of light, while the cones give both light and colour perceptions This was restated by Parinaud (1881 ; *La Vision*, 1898) and von Kries (1894), apparently in each case as an independent discovery Since two mechanisms (rods, cones) are here employed, this is known as the "duplicity-theory," and now ranks with the others as the third important theory of vision All the theories have given rise to much dispute and many variations, which cannot be explained here on account of their technical character (see note, p 313)

For the details of the various theories of vision the student must consult the standard works on the subject The sketch offered here is no more than an illustration of the movements which have constituted the more obvious differences between earlier and later treatments of the subject. The main points to be emphasized are the following —

(*a*) The sense-data, the visual experiences, can be observed under experimental conditions This process helps to determine accurately the factors which at a given time control behaviour

(*b*) A similar method applied to the behaviour of animals shows how far the retinal stimuli are effective factors in the life of animals.

(*c*) Something may also be done, from the study of literature or by direct experiment, to decide whether there has been an evolution of the colour sense in the history of mankind.

It is obvious that if satisfactory results can be obtained, they will form an important body of knowledge about human and animal behaviour. It may ultimately be possible to construct a formula of evolution from a primitive state of sensibility to the most subtle discriminations of colour. It may be possible to determine whether colour perceptions are functions of the visual apparatus as a whole or are strictly cerebral. It may be possible to understand the psycho-physical processes so adequately that emotional values can be correlated with colour schemes through the general organic processes which accompany the varying stimulations experienced as colours. While these and many other possibilities open out to speculative minds, it is at present necessary to recognize that the speculative element is large, and that existing theories of vision command general assent only on the most fundamental points In addition to anatomical structure of the eye, as a necessary preliminary, the psychologist is most concerned with the differences between direct and indirect seeing, colour blindness; relation of the colour effect to (1) length of the light-wave, and (2) intensity of the stimulus, combination of stimuli and colour-mixture, effects of spatial proximity as giving contrast-values; and, finally, the time-relations of the stimulations as affecting questions of adaptation and the formation of after-images

Helmholtz treated the sensations of sound as thoroughly as sensations of sight, and with even more decisive results. He possessed, in addition to his unrivalled knowledge of mathematics and physics, a singular ingenuity in the construction of the instruments which were required to test his hypotheses This faculty enabled him to foresee where difficulties would arise, and to anticipate the points at which the practical application of the theory would reveal its weakness. The subject of sound was in need of that particular kind of synthetic thinking which Helmholtz was able to give it. After he had once entered the field, he supplemented the shortcomings of innumerable other workers: he supplied mathematical men with finer points of physics, showed the teachers of physics how to develop mathematical methods, visited famous organ-builders and gave them valuable hints—in short, held together in one comprehensive group the different aspects of a subject wide enough to include theories of tuning-forks and Chinese music

The particular contribution made by Helmholtz to this subject was the description of "clang colour." It is a matter of common observation that what is usually called "the same note" is very different on different instruments Helmholtz explained this different "colour" of the fundamental sound as due to the presence of over-tones, showing that the number and intensity of these over-tones was different for different instruments, and that these differences corresponded with the difference of the experience. As mathematical physics progressed in the analysis of the sound or objective stimulus, and as in consequence the difference of one sound from another could be expressed in vibrations and complexes of vibrations, the physiologists were called upon to discover a structure sufficiently complex to take up or respond to the distinguishable tones The general knowledge of acoustics favoured the hypothesis that the human body contains an instrument sufficiently complex to produce sympathetic vibrations corresponding to definite wave-lengths The Helmholtz-Hensen theory is the resulting compound explanation of hearing for Hensen, taking the vibration-theory of Helmholtz, showed that the basilar membrane is structurally adequate to the work required by this hypothesis

This theory makes large demands on the imagination It seems to rest primarily on a conception of specific energies, since it requires for each stimulus a special physiological element capable of responding to one, and only one, stimulus It must therefore suffer from any suspicions that may be roused as to the validity of specific energies As early as 1879 James (*Psych*, ii 169) said that he was disinclined to accept the theory, and in 1886 his position was strengthened by Rutherford's views, communicated in that year to the British Association Work done later by Rayleigh on sound, and by Ewald and Meyer on hearing, have tended to show that James was right in thinking "the Helmholtzian theory is probably not the last word in the physiology of hearing" The new point which most affects the general theory is the fact that (according to Rayleigh) it is no longer correct to regard the periodicity of the sound-waves as ceasing where the nerve process begins, on the contrary, the periodicity is continued from the sound-waves to the nerve-currents. If this theory is finally established, it will bring to an end the doctrine of specific energies. It may also involve, both for seeing and hearing, a new interpretation of the basis of qualities, providing in differences of period a common denominator for interpreting differences of tone and of colour

The work of Helmholtz has called for special notice, not only as an advance in respect of details, but also as the real basis of experimental psychology The method used by Helmholtz was not that of the mere specialist it was distinguished by its synthetic character and its tendency to break down the departmental character of the sciences—a character which is not so much due to the nature of things as to the nature of man The existence of departments of knowledge is a convenience highly prized by those who find one thing enough for them to do, it is the privilege of superior abilities to override the distinctions But the ability must be of the right kind Helmholtz united one subject with another by filling up each one individually until it overflowed into another This was a way of maintaining the unity of knowledge which was consciously chosen and followed as a reformation of the decaying " Naturphilosophie " Experimental psychology came into existence in this way, and in the light of this genesis it must be estimated. Historically, we should perhaps have begun with the famous enunciation by E H Weber of a general law governing the relations between stimuli and sensations. This was not done because Weber's statement was a mere by-product of physiology when that science was only emerging from obscurity, and its great exponents were not conscious of any intention to develop a new union of the spiritual and the material. This expansion of the whole subject was the work of Fechner.

§ 6. Physiology was not the only science that directly affected the development of theories about consciousness. While the physiologists were discussing the actions of organisms, the inorganic was being reduced to more definite laws Here, again, the French led the way by attacking the problems of electricity. Electricity and magnetism were at first explained by the assumption of "imponderable fluids," an obscure substratum analogous to the "vital forces" in physiology From 1820, through the work of Oersted and Ohm, this sphere of phenomena began to yield to quantitative treatment Fechner wrote a treatise on Ohm's Law (1831), and the influence of this study of physics is traceable in much of his later work. Electricity became important during the early part of the nineteenth century for two distinct reasons The discovery by Galvani of the presence of electricity in animal organisms created the greatest excitement, the secret of life seemed at last to be no longer hidden But zeal was checked by the success which attended Volta's experiments the same phenomena could be produced artificially, electricity was a matter of physics as much or more than of physiology If the combined result looked like the loss of a cherished hope, it was actually in a very different sense no small gain it was a step in the direction of that unification of the sciences which progressed so rapidly during the second and third quarters of the century.

Together with anatomy and physiology, physics also made great advances The work associated with the names of Mayer and Helmholtz on the continent, Joule and Lord Kelvin in England, terminated in the conception of energy and the particular formula known as the law of the conservation of energy. The details of this sphere of science do not concern us, but the principles have to be considered. For the question of consciousness is closely connected with the question of life, and the nature of life was the fundamental problem in the solution of which nearly all these branches of science were developed. The living organism was no longer consigned to a mysterious corner in the field of science; those who had conquered so many other things declined to leave this unattacked. The development of organic chemistry promised to reduce the processes of secretion in the body to the level of all chemical processes; the body was to be proved a laboratory more refined but not otherwise different from the laboratory of the chemist. The mysterious "animal magnetism" was carefully studied by Du Bois Reymond, and his results coincided with the more general results of Helmholtz: the phenomena of chemical change, of electricity, and of mechanical force were all reducible to terms of energy. The body was thus shown to be a machine, operating according to laws common to it and other machines the age of wonder gave place to the age of analysis.

Such was the general progress of the sciences up to 1870 It was sufficiently startling in itself, circumstances rendered it more conspicuous than usual Public interest in scientific achievements is usually due either to economic results or to religious antagonism Both factors were prominent in the period now described chemistry, for example, affected agriculture by its discovery of fertilizers, electricity and steam were economic factors affected by the new physics; while the discoveries which affected the growth and nutrition of organisms powerfully affected the science of life, from which arose the "question of the soul."

The dispute on this subject occupied a great part of the attention of writers and readers during the third quarter of the nineteenth century The works of Vogt, Moleschott, and Buchner acquired notoriety just because they hastened to the extreme conclusions which gave the public a basis from which to develop either the bitterest opposition or ignorant iconoclasm To this no further attention need be paid the subject was not to be settled by a referendum, and science could not afford to conciliate sentiment The main result of the outbreak was a feeling that people ought to be educated up to the new level, and the great leaders of science undertook to contribute time and labour towards this work of enlightenment. The popular lectures of Helmholtz and of Huxley remain as monuments not only of scientific achievements, but also of humanitarian interests.

The "question of the soul" was a side issue. The real result of the movement from 1830 to 1870 was the recognition of the unity of science, as an ideal if not a fact, and the growing consciousness of the value of method. It was clear that progress had resulted from detailed investigation and from the employment of exact quantitative measurement. Life might still remain an unsolved problem, but those who said that the problem was no nearer its solution could not deny the progress made in the understanding of its manifestations For the bare concept of "life" was substituted the sum of complex processes which make up the totality called "life" This suggested the possibility of substituting for the idea of the soul the analogous idea of consciousness as a sum of complex processes To understand this consciousness some method was required which would make the different processes distinct and at the same time admit a quantitative measurement Fechner led the way, Lotze followed, and the outcome, with which we shall be occupied later, was the "new psychology" of the nineteenth century.

CHAPTER II

FROM FECHNER TO WUNDT

§ 1 THE study of Fechner's life[1] is one of the most instructive ways of following the progress of thought in the nineteenth century Born in 1801, Fechner lived through all the vicissitudes of European science which occupied the middle of the century, he died in 1887, the spectator of a new world of ideas Leipzig was the city in which Fechner spent his life as a student—that is to say, his whole life after 1817 His career began with poverty and the study of medicine The latter ended in disgust and such complete academic success that Fechner realized the degenerate state of his chosen profession Meanwhile poverty led the young student to make translations of French scientific works. In 1820 Fechner's mind was filled with the dreams of the "Naturphilosophie," and inspired by its cosmic outlook In 1824 he had completed his translations of Biot's *Lehrbuch der Physik* and Thénard's *Chemistry*, and asked himself whether the "Naturphilosophie" could have furnished a single one of the facts discovered by the method of the French school In this, as in many other points, Fechner's experience was the experience of Germany in miniature, the land of Schelling and Hegel looked to France as the complement and antithesis of its own speculative mood. At this stage Fechner became interested in physics, and wrote some valuable treatises on electricity. The transition from physics to physiology and psychology was made in 1838–40, when the problems of colour vision were subjected to an experimental treatment.

The work of these years ended in the nervous collapse and almost complete blindness which obstructed or wholly prevented all further undertakings until the end of 1843. When he resumed his duties as Professor, Fechner devoted most of his time to speculative problems. As early as 1836 the life after death had been the subject of a work issued under the pseudonym of "Dr. Mises," but the publication of *Nanna* in 1848 marked the full development of that cosmic philosophy which was always united by Fechner with the minute detail of experimental research. In 1851 appeared another exposition of this cosmic thought, the *Zend-Avesta*; in 1855 the doctrine of atavism was defended against speculative philosophies of nature; lastly, in the year 1860 the *Elemente der Psychophysik* was completed. During the remainder of his life Fechner was engaged chiefly in a study of the principles of æsthetics and in defending the doctrine of the *Psychophysik*.

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[1] Lasswitz, K., *Gustav Theodor Fechner*, Ed. 2, 1902.

Looked at from the point of view of contemporary history, Fechner's mind is a result of two very distinct influences—the romantic philosophy of the post-Kantian school and the scientific development of the second quarter of the nineteenth century. Even the psycho-physical standpoint is an outcome of the "Naturphilosophie"; it is a concrete instance of that ultimate unity of the sciences which the doctrine of an Absolute postulates. To Fechner, as we know, the idea came as a revelation. Lying in bed on the morning of the twenty-second of October, 1850, he saw the vision of a unified world of thought, spirit, and matter linked together by the mystery of numbers. So was it, perhaps, that Pythagoras saw the quality of sound transformed into a measurement! The distinctive feature of Fechner's insight was its power of sustaining research; it grew by induction, and did not exhaust itself in mere abstractions. But the same expansiveness of mind showed itself in other directions, in *Nanna* and *Zend-Avesta*. Here we see the mystical spirit of the "Naturphilosophie" asserting its claims against the analytic tendency of the eighteenth century. Mathematics and mysticism are not so very far apart by nature; Herbart is a good example of the close alliance between metaphysics and numbers. Pythagoras, Plato, and Proclus illustrate in their different ways the deep-rooted sentiment that the secret of the world is to be grasped by the mathematician; in numbers they saw the inner unity of immediate practice and ultimate reality Hegel became more and more addicted to the study of Proclus, not altogether to his advantage. From Proclus it is a short step to the philosophy of the East, the original home of mystery and numbers Schelling, Hegel, and Schopenhauer all exhibit tendencies that seem foreign to the course of European thought, they recall the vague spaciousness of the East and its reflection in the semi-Oriental Alexandria From 1820 to 1830 Hegel delivered his annual lectures on the philosophy of history, and pictured to his audience the life of the East as " a dream, not of the individual mind, but of Absolute Spirit " The West was just beginning to discover the East, Hegel could quote from Colebrooke and remind his hearers how new the knowledge of Eastern literature still was This new influence, one of the acquisitions of the nineteenth century, must henceforth be taken into account Schopenhauer felt the attraction, Hartmann succumbed to the " drowsy syrops of the East ", Fechner had his *Zend-Avesta*, followed in later years by the oracles of Zarathustra

All through the centuries thought has been observed trailing a cloud of speculation, saints and scientists seem to present themselves ultimately with the same golden halo, worn with complacence or irritation according to their respective temperaments And here, in the middle of the nineteenth century, we find the same problems that troubled Plato still unsolved, and a mind that embraces Platonism and Atomism, repeating again the lost formulæ that should exorcise the mystery It is time to face the matter squarely

Psychology, of course, has nothing to do with metaphysics; the psychologist asks, " What are metaphysics ? " in the tone of the man who said, " Who is my neighbour ? " When the issue becomes practical, this kind of destructive innuendo fails; the psychology proves to have a private metaphysics at least, or it avenges itself by giving a psychological explanation of all other metaphysics In this the psychologist shows a true instinct, to offer a psychological explanation of the metaphysical mind is to invite a psychological explanation of the psychologist's mind, but this the psychologist can reserve for himself. Ultimately, without doubt, there must be in some sense a psychological explanation for all systems of speculative thought. Whether that means the consequent rejection of all such systems, as exploded fictions, is quite another question. To give a psychological explanation of a course of thought is not the same thing as proving it a form of madness Yet there is no doubt that to the average man giving a psychological explanation of a system of ideas means really discounting its value, it is as if you tapped your skull with your forefinger and looked knowingly at the audience If your action did not imply that the author of the system was mad, it would at least be taken to mean that his ideas were "peculiar," very much his own, not universal

This is the crucial point It so happened that the epoch into which Fechner was born had seen this very fact dawning upon some minds All systems of thought, says the Hegelian, are explicable in terms of thought, they are explicable psychologically, if you take the right kind of Psyche, the pure spirit, the absolute With this declaration the ages of the world run back, the language of Heraclitus was converted into scientific German, and Europe was told most emphatically "though the Logos is common to all, most men live as though they had a private wisdom of their own" With Heraclitus must be joined the last exponent of the Greek traditions, Plotinus If we are to believe that man is the last and highest product of nature, can anything disprove the conclusion that in reflective thought the creative reason knows itself? Can anything counteract the wonderful fascination of this belief when it is seen to abolish the dull stupidity that looks animal-like on things and never sees them to be only the outward show of laws, principles, ideas—a slumbering thought Is it, after all, a mistake to busy ourselves so much in division and analysis and classification? Do we not fail to enter into the very heritage of all human thought, that higher unity in which the mind is one with itself, that intuitional life of the spirit compared with which the days of our intellectual labours are like the dissociated images of dreams. In India, says Hegel, the absolute spirit dreamed; when it awoke it was in Germany.

The romantic school, then, was more psychological in its own way than its opponents will admit. Like Wisdom of old, it *did* nothing; it only undertook to show the meaning of what was done. Wisdom, said Aristotle, is above practice; the means do not create the end, it is the end that dictates the means; and wisdom is the inner realization of the end or purpose immanent in all action. If so, the formulæ are secondary; spiritualism, materialism, monism, atomism are all names for processes, stages in thought, they serve their purpose not as eternal truths, but as adequate hypotheses. And in psychology the same will be true. The definition of the soul will be a hypothesis that serves to make action more intelligible; if it is limited to that function it may be hampered by its own limitations Descartes achieved much by limiting his concepts; progress abolished the limitations. In the end it may be true that inorganic, organic, plant, animal, man are all names for limitations; they may stand for divisions as artificial as the counties in a geographical map, nature may ignore them as the earth ignores its political boundaries.

It is, therefore, not irrational to have more than one way of looking at things, to value divisions as working principles, and at the same time to question the value of the divisions. It is not irrational to co-ordinate the psychical and the physical, and yet maintain that the psychical is never wholly physical In biology, cerebral physiology, and psycho-physics this is equally true; they all involve a unification of distinct spheres, and so testify to a unity beyond the distinctions Fechner saw this in a peculiar way his mind was occupied with so many diverse spheres of thought that the very diversity annihilated itself, he could belong wholly to none of them. His *Psychophysik* was not the mere invention of a science; it was the attainment of a new plane of thought. As the diversity of nineteenth-century thought came to a point in his work, so from him the new diversity emerged. The centre of controversy shifts to the question, How much of the inner life actually enters into this sphere of measurement and quantity?

Fechner's *Psychophysik* belongs to the later period of his life. Both in point of time and of logical sequence

Fechner seems to have come to the problem of consciousness from a "physical philosophy" in the old sense—the sense in which Aristotle applied it to the Ionians. The outlines are comprehensive, and the categories include all being. The existence of parts implies a whole; every atom has its place in an organized totality; if it belongs to nothing else, it belongs at least to the cosmos The atom is the physical unit; by the help of this idea of discontinuity we can construct practical interpretations of nature, such as the law of gravitation. Nature, therefore, is a complex of concepts (for the atom is primarily conceptual) and laws, it is nothing dead and cold, the lifeless matter of the materialists Nor does Fechner mean that matter is the bearer of an animating principle, that inner life of which the primitive hylozoism had spoken Abandoning the "Naturphilosophie," Fechner moves toward the earlier Kantian standpoint Phenomena and the order of phenomena are the real material, the stuff of our thinking, nature is experience looked at from an impersonal point of view, the point we usually call "objective" The other point of view is the subjective, that which is peculiarly each individual's possession There is no need to linger over the detail of this theory in its scientific aspects, it will be enough to remark that Fechner speaks of three forms of nature—the inorganic, the organic, and the cosmorganic; that these are distinctions depending partly on the point of view taken, partly on the degree to which the unity of system is actually realized in nature The inorganic is usually regarded as the basis from which scientific thought should begin. Fechner adopts the reverse method; the inorganic never produces the organic, whereas the organic is liable to degeneration, and even in the normal state the "mixed natures" of the animal world contain a large percentage of inorganic material. An organism cannot be said to *contain* life; its own organization is its life; and life is that form of mechanism which stands out distinctly through its own attributes, it is, so to say, nature's mechanism. Organization and the presence of system, along with the equivalent of laws, are therefore the ultimate terms. Organization is presented to us in very different forms and degrees. If man is primarily an organism, not a soul in a receptacle, what ground is there for separating organization from "soul" or life? Fechner abides by his logic, there is none. Plants, animals, man, stars, the universe—all these have organization in their degree and their way, all have, therefore, their own life and their own "soul."

This climax is a severe strain on the trusting disciple who felt secure in the wake of an atomist and a man of science Fechner's public in 1850 was composed chiefly of the æsthetic type of lady who could see the soul in the flower and derive from the plucking of a blossom all the thrill of a public execution Yet there was real value in this line of thought If it over-reached itself, it did not sin more than its antithesis, materialism, against the current views, which must put an end to all subjectivity, it restores the value of experience without degrading observation So far as the study of human life and behaviour is concerned, it has the advantages of the time-honoured Aristotelian doctrine—it stands by the organism against mere materialism and mere spiritualism In a sense, there was nothing very new in all this Kant had already destroyed the bald antithesis of mind and matter, Spinoza had adopted a fundamental unity; and Leibniz had spiritualized atomism But in two ways Fechner made a distinct position for himself In Spinoza and Leibniz the ontological element persists; Fechner drops the whole subject of the "thing-in-itself," and takes the level of experience as itself the real bedrock. In Kant the critical tendency evolved into a dogmatic scepticism, which stated unequivocally what was to be acquired from nature. This was notably the case in reference to the sphere of psychology or pneumatology Fechner, accustomed to experimentation and the adventures of the laboratory, applied to the world of science that doctrine of belief which Kant reserved for the world of conduct

The really difficult point about Fechner's method and system is its refinement, or what the ordinary man would call its "abstractness." The ordinary man thinks easily of mind and matter; he finds it difficult to regard them as points of view, not as antagonistic substances. If you try to persuade him that it is more "concrete" to talk of unity, organization, and law than to discuss the mind alone or the body alone, he grows restless, and if you declare the distinctions of science to be "categories," he thinks you are destroying its "reality." This is the first ground of the objection to the *Psychophysik*. the plain man defies anyone to measure his mind, and in this he is backed up by all the devotees of "common sense" (used as Reid used it) and their next-of-kin, the intuitionists. This has the misfortune of being irrelevant one does not really measure anything *absolutely*; the very essence of measurement is comparison, analogy, relativity When the plain man says it stands to reason that a thought cannot be measured, he means measured "absolutely." He is superabundantly right. Yet the same man would say he was strongly excited, violently agitated, or deeply stirred; he would understand quite well the science of the valet who measured his employer's temper by the broken furniture; he would admit, in short, that mental states do have physical equivalents as a matter of mere co-ordination, and that you can "measure" psychical activity just as much (or just as little) as you "measure" a child's growth by pencil-marks on a door The first requisite is to know what you want to do; the next is to discover the means. A more detailed account of the *Psychophysik* will make this part of the subject clearer.

The germ from which the *Psychophysik* ultimately developed is to be found in Weber's experiments upon the senses of touch, sight, and hearing Fechner began by believing that there *must* be some connection between the physical stimulus and the sensation. He remained for a time unable to formulate this connection, but finally adopted the belief that the relative increase of the bodily activity might be equivalent to the increase of psychical intensity. There the matter might have remained but for a correspondence with Wilhelm Weber, the electrician, which started Fechner on experimentation. The results of these experiments seemed to support the hypothesis, and Fechner then found that his position had already been reached by E. H. Weber, the physiologist. The difference between Weber and Fechner lies in the fact that the former laid no emphasis on the significance of his discoveries for psychology; he reached his results as a physiologist, and looked no farther.

Outer psycho-physics is the name Fechner gave to the science of measuring sensations by the required stimuli. The methods which he formulated[1] are three: first, that of the just observable difference, the discovery of minimal thresholds; second, that of right and wrong cases; third, that of average error. The general formula which serves as theoretical summary of the doctrine is that the sensation is in proportion to the logarithm of the stimulus. For the technical elaboration of this and the mathematical formulæ employed, we must refer the reader to the original, or to the many expositions available in text-books (see note, p. 313). In general, it is obvious from what has been said that the core of the whole matter is the correlation between outer or physical and inner or psychical expressions of energy. Fechner does not contemplate any transmission of energy from the outer to the inner; the scale of changes in the outer sphere is, and remains, parallel to the scale of changes in the inner sphere. Some of the inner changes are not correlative to outer stimuli, but occur in consciousness as a self-contained and self-preserving system of energies. Attention, for example, seems to be of this kind, or the action of memory, for in the rise and fall of these activities there seems to be implied a system of stimulations analogous to that which had been more successfully studied in the field of sensation. This part of Fechner's work, which seems to be a translation of Herbartian notions into a mystical form of "wave-theory," has not retained the attention of psychologists. None the less, the driving force of Fechner's whole life was concentrated on this point; for if the psychic energy is always conserved and yet actually falls below a zero point of actuality, we seem able to follow consciousness itself into an underworld, a world under the threshold of our realized being, a world which must then be no other than the abiding-place of a general consciousness of which life is but a ripple on the surface. The attraction of this speculative outcome is never wholly exhausted The term "threshold" is partly a scientific term for the limit of perception, partly a name for the border-line between light and dark, here and hereafter, individual and universal consciousness Fechner united both uses of the term, later psychology has divided them. The experimentalist keeps the former; the latter we find again, not only in worthless lucubrations, but also in earnest inquiries such as those of Myers and James, though the value of these inquiries is not yet such as to give them a place in the records of psychology

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[1] Formulated, but not invented; all the methods had been previously suggested. See Klemm, Eng. trans., p. 220. On previous use of these methods, *vide* p. 313.

The law known as the "Weber-Fechner Law" has been so often described and discussed that we may be excused the task of repeating its definition[1] Its fundamental point is the fact that a sequence of sensations, regarded as inner events, can often be shown not to follow, point for point, the increase of the stimulus If we suppose that a light is perceived when it has a value as stimulus equivalent to 10, and that we notice a change in that light when the stimulus is equivalent to 12, it follows that (*a*) the interval between 10 and 12 has no perceptible counterpart, and (*b*) that a stimulus equivalent to 20 will have to be raised to 24 in order to cause a perceptible difference Given the possible truth of this hypothesis as an assumption, the work of the investigator consists in finding out how far it is true for all kinds of sensation, or for all parts of the scale of sensation in any one case, and also in determining what is the *minimum sensibile*, the "threshold" in each case Volumes have been written on this subject, many of them valuable, and the results seem to be (*a*) that the law does not apply so widely as at first it seemed to, and (*b*) that psychologists are not agreed as to whether the proceedings concern them or not. The first question, being a matter of details, we cannot consider further. The second may be illustrated briefly, as it is obviously at bottom a question concerning the nature and scope of psychology

James,[2] with characteristic completeness, says: "Fechner's book was the starting-point of a new department of literature, which it would be perhaps impossible to match for the qualities of thoroughness and subtlety, but of which, in the humble opinion of the present writer, the proper psychological outcome is just *nothing*." In spite of this, the subject is "a chapter in the history of our science"; moreover, it is a very long chapter in James's *Psychology*. Ultimately James consigns this whole "department of literature" to physiology. This was one of the outstanding views of the subject,[1] seen more soberly exhibited in J. Ward's article, "An Attempt to interpret Fechner's Law." In this article (*Mind*, 1876) Ward adopts the view that the law should be given a physiological rather than a psychological interpretation, provided that a physiological explanation of the facts can be given. Such an explanation he finds in Bernstein's researches, which seem to establish the propositions that (1) a stimulus-wave in its passage along a nerve-fibre remains throughout of equal strength, (2) but on reaching the centre is irradiated and (3) meets with continuous resistance, which (4) is proportionate to the strength of the wave at that point.[2] From this physiological basis it is possible to express the intensity of a sensation in terms of its irradiation or neural extension. Against Fechner it is urged that he gives no explanation of what he means by intensity. If intensity is equivalent to irradiation, and if the propositions of Bernstein are true, Fechner's formulæ would be the indirect measure of sensation and the direct equivalent of physiological processes.

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[1] See above, p 111, and note, p 313

[2] *Principles*, i. 534.

The Herbartians received all psycho-physical doctrines with reserve; they maintained in general that immediate experience can only be known in one way—immediately. To some extent Ward's position in this article is on their side. Another supporter of their position (not to mention such professed Herbartians as Volkmann) was Lotze. The main point of the opposition was the assertion that Fechner did not pay enough regard to the psychical side of the matter. If the variations of the stimulus produce differences of quality as well as quantity in the resultant consciousness, and if in any case the results are conditioned by inner activity

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[1] Revised, however, in the later work, *A Pluralistic Universe*.

[2] Quoted verbatim from *Mind*, 1876, p. 460: references to Du Bois Reymond's *Archiv* for 1868 and Bernstein, *Untersuchungen*, etc., 1871.

(attention), these formulæ seem to state a very small part of the whole matter. That they express *something* no one wishes to deny; what is implicitly denied by these criticisms is the assumption that Fechner's works unveiled the mystery of sensation

Fechner remained to the end of his life ceaselessly active He made his own reply to the more important criticism in a new statement of his position entitled, *In Sachen der Psychophysik*, 1877 This was not the last word, for it preceded G E Muller's *Zur Grundlegung der Psychophysik*, which moved Fechner to write a *Revision* (1882), which was to take the place of the original *Elemente* In 1887 he added an important statement of his views in the article "Ueber die Psychischen Massprincipien und das Webersche Gesetz" (*Phil Stud*, iv 1888) The *Revision* was edited in 1889, two years after its author's death, by Wundt The objections or criticisms which appeared in Fechner's lifetime cover the whole ground, and present all the principal views which have been advocated up to the present. The objections were classified by Fechner, and the list here given will be found more fully described in Ribot, *German Psychology of To-day* (E Tr, 169. Cp Klemm, E Tr, 245) They are —

(1) That the laws and formulæ of psycho-physics are not supported by facts of experiment

This contention was made by Hering during the years 1872 to 1875. Later authorities have shown that (*a*) Weber's law cannot be converted into a general law for all sensibility, and (*b*) that it holds only for some senses within definite limits.

(2) The law has only a physiological value Of this view Bernstein was the main supporter, as quoted above

(3) That the mathematical expression of the formulæ is wrong. Thus related to the fact that Fechner correlated an imperceptible stimulus with what he called a negative sensation. Though the stimulus is imperceptible, it must be given a quantitative objective value, say 1. Then to the objective 1 corresponds the subjective 0, but the two series of stimulus and sensation should start from an equal position, both being either 0 or 1. This point does not seem

to have more than formal value, for (if I understand Fechner rightly) he meant by negative sensation what others mean by latent or unconscious factors (e.g. Herbart or Lipps), which are positive in function, though less than a perceptible totality.

(4) That Fechner ignores the real character of mental processes; they are biological rather than mathematical in their own nature. This objection is far-reaching, and has been often repeated in later writers. It involves (*a*) the view supported by von Kries, that psychic states are intensive, and for such "magnitudes" there is no known method of measurement, because there is no constant unit. To make measurement possible the increments of sensation should be equal, but "in a series of sensations e, e_1, e_2, we cannot say that the change from e_1 to e_2 *equals* the change from e_m to e_n." This is (*b*) a special case of the general objection that life processes cannot be reduced to the abstract form which a mathematical treatment requires. Similarly, Boas raised the point that different intensities are equivalent to different qualities, so that a light A cannot be called two or more times greater than another light B, since the sensations *a* and *b* differ one from another as much as a light differs from a sound. Whether this objection really makes *all* measurement in psychology impossible is a point that still remains in dispute. It is sufficient for the present to show by these quotations what views were held about Fechner's work in the twenty years that elapsed between the publication of his *Psychophysik* and the last defence which he himself published. As the psycho-physical interpretation, which Fechner gave of Weber's law, was seen to be valueless, a choice remained between the physiological and the psychological interpretations. These were defended by G. E. Mueller and Wundt respectively. The subject underwent considerable modification at a later date, and must be deferred until we come to more recent experimental work (*vide* p. 276).

§ 2. Rudolph Hermann Lotze was born in 1817. In 1834 he entered the University of Leipsic, and studied medicine and philosophy for the next five years, qualifying as *docent* in both faculties in 1839. Lotze thus began his career in the circle of E. H. Weber, from whom he learned those scientific methods which always tempered the speculative quality of his mind. Though his first work was entitled *Metaphysic* (1841), Lotze secured his first literary success in the sphere of the sciences The air was still full of the problem of vitalism, Muller at Berlin still held to the idea of an "imponderable substance" which no analysis could reach or resolve Lotze in 1842 declared himself an opponent of this vitalism; he sided with those who thought that this was a remnant of metaphysics for which science had no place But even at this stage Lotze's position exhibits his characteristic subtlety and that definite lack of certainty which so often annoyed his friends and exposed him to his enemies. Life, for Lotze, is a system of activities It may be explained as a mechanism, without even the usual admission that it is "ultimately" inexplicable Yet, for all that, materialism is wrong

In 1844 Lotze became Professor of Philosophy at Gottingen, and from this date begins the series of works which most especially concerns psychology After writing two books on æsthetics and one on physiology, Lotze produced, in 1852, the work entitled *Die Medicinische Psychologie oder Physiologie der Seele* The date and the title are both worthy of notice. In the next quarter of a century many books were to appear on the subject of "the physiology of the mind", this was the great prototype. In the sphere of the natural sciences the influence of Hegel was now both dead and buried, only the memory of the "Naturphilosophie" remained, a spectre of idealism driving the more timid to take refuge in the obscurity of unilluminated "facts." Under such conditions courage was needed to enable anyone who valued his scientific reputation to say anything that sounded speculative. Lotze emerged as one who had shown that courage. With his contemporaries, he rejected Hegel, against his contemporaries he clung to the belief that idealism still remained the true way of thinking With one hand he deals out the facts of science, with the other he supplies those principles which unite and systematize the facts.

"I called on Lotze," says Helmholtz, recording a visit to him in Göttingen, "but found him too hypochondriac and slow, so that I could get very little out of him." Helmholtz was, perhaps, not quite the kind of man to whom Lotze would talk freely; the philosopher would feel too acutely how inadequately his thoughts could be demonstrated or his theories established by experiments. The unique position of Lotze was made for him by training and by nature; none could accuse him of lacking scientific knowledge, and his word carried weight when the mere philosophers went unheeded Yet it was primarily as a philosopher that Lotze cared to be heard, and he suffered in consequence from a double responsibility. Though the struggle between science and philosophy, the mechanical and the ideal, was the inner process of Lotze's mind, it did not end either in disruption of thought or in despair For him they were reconciled in a unity that was not either Hegelian or Kantian, though, like the former, it was idealistic, and, like the latter, it was critical and ethical In the sphere of psychology, to which we must confine these remarks, this unity was shown in the grasp of facts, the simultaneous retention of the phenomenal and of the real

The enlightened reader will see that this is the preface to the "question of the soul" as it appears in Lotze The mediævalist raised the question in the form, "Does the soul know itself or only its acts?" Kant brought psychology under his general ruling that we only know phenomena Hegel declared for a transcendence of the phenomena Lotze advocates a new answer which depends on a new statement of the question. If the soul knows itself in its acts, if, in fact, the error has lain in the persistent separation of Being from Doing, there may still be a more adequate grasp of the whole reality in a doctrine that revises the method first, and then translates into its own terms the language of observation. This was Lotze's aim; the study of his psychology must begin with the clear understanding of this point of view

The distinctive feature of Lotze's psychology is the retention of the concept of "soul." The exact interpretation to be given to this term will be more easily seen later; it requires to be mentioned here because it is the beginning as well as the end of the whole theory. The soul is active, but not in such a way as to evolve its own experiences. Its activity is conditioned by the operation of extensive things, so that the order of procedure in time begins from the stimulus and its consequence in sensation. Lotze here parts from the method of Fichte, he does not admit that the soul can generate experiences without the external occasion, though he has to admit that no direct reason for this limitation of action can be demonstrated. In opposition to the other contemporary trend of thought, the materialistic, Lotze sharply divides the physical event from its psychic equivalent; the stimulus is, therefore, reduced to a mere occasion, in explicit agreement with the original doctrine of the Occasionalists

While the actual process by which the physical becomes psychical remains a mystery, the stages can be empirically determined. The outer object generates an inner sense-stimulation, which is continued in the nerve as conductor, till it arrives at and is transformed in the central organ; here the soul is affected unconsciously, and the conscious reaction is a higher grade dependent on attention. This analysis is sometimes stated more simply in the three terms, "stimulus," "neurosis," "conscious sensation"

Lotze treats the nervous system as a pure mechanism; its function is to mediate between the object and the central organ; it transmits only motion and not sensation. The idea that each part of the nerve may have its own sensation as the accompaniment of its motion is explicitly rejected, a nerve acts only as being subject to shock and capable of regaining its equilibrium. A certain degree of habit arises from continuous repetition of this action, so that in time the nerves become "specific" in their action. To this extent they might be said to have "specific energies," but the doctrine of specific energies as held by Muller is rejected, and very little importance is attached to this modified form of the doctrine.

In the same way Lotze admits the value of Weber's Law as a statement of objective fact, but declines to give it any real psychic interpretation The psychic changes are changes of quality; they correspond to the quantitative changes of the stimuli; but since the psychic units are distinct qualitative sensations and form a discontinuous series, the Law gives us no real knowledge of the inner relation between physical and psychical series. To say that a change in the rate of vibrations of the ether corresponds to a change of colour is to state two facts in their relation, it explains nothing

For Lotze the world of inner experience is wholly distinct from the outer world of physical forces and events. If we now pass on to consider this inner experience, the language of the physical sciences can no longer be employed. Motions can be described as having degrees of strength or as being opposed one to another; but one presentation as such is not "stronger" than another, nor can such events as perceptions be described as "opposed" one to another Here, then, Herbart is definitely rejected. There are differences in the elements of an experience some are more impressive, more lasting, and more inclined to occupy the field of consciousness. But all these are qualitative differences, to be reduced to a qualitative basis if any explanation can be found. In short, it is in the language of values and not of mass or force that we must express this variety and its relations With Lotze, as with all the idealist psychologists, memory is the crucial instance, there is no faculty of memory, no cerebral organ, no "storehouse of ideas" only the living continuity of the soul and its power of reproducing its own previous activities.

It is interesting to observe how accurately, though perhaps unintentionally, Lotze repeats the arguments of Plotinus. But the question has become more complex than it was in the days of Plotinus, and we require to see how far Lotze meets that increased complexity. The subject of memory is no longer to be regarded as something unique; it is one aspect of the general question of mental reproduction, and when memory has been defined, it is necessary to give an account of its processes. There must not be any contradiction between these two parts of the theory if it is to prove satisfactory.

First as to memory. Lotze regards the soul as the receiver of incoming currents and the initiator of outgoing currents. If we admit any distinct kind of action that can be called mental, if there is any difference between man and the machines, it is necessary to allow that there intervenes between the afferent and the efferent neural currents a third factor. We may say, then, in the first place, that a psychic factor is not to be excluded *a priori*. Having cleared his ground, Lotze proceeds to give his reasons for not treating memory as a mere precipitate of impressions, a storing up of injected copies of things. In opposition to this view, he maintains that memory does not, in fact, keep any such pictures what it really retains is a kind of schema, a plan of action, and the term " memory " really denotes the power of acting again in the way in which one acted before, with a recognition of the fact that the action is qualitatively like a previous action This might be described as, in essence, the typical form of a spiritualistic interpretation of memory. It seems to involve—at least, in Lotze's way of stating it—the following additional points The experiences which have once formed part of the life of the soul can never again be wholly lost The external event, as such, does not necessarily enter into the life of the soul, for it may go unnoticed, but if it is noticed it involves attention, and is in some degree woven into the web of consciousness Finally, the inner process is different in kind from the receptivity of sense, for there is in memory no shock of stimulation; the memory of a pleasure is not in itself pleasant, it is an activity to which all colouring is incidental Pure inwardness and the necessity of attention to constitute the remembered process—these are the characteristics of memory that make it at once the product and the proof of independent psychic activity.

So far we have not gone much beyond the doctrine of the ancients, of Plato and of Plotinus When our philosopher remembers his science, the strain begins to tell. He is compelled to mention the cerebral motions, those weak oscillations which accompany the act of remembering. These would give no trouble by themselves, for it would be easy to say that they represented the use of the body as instrument of the soul. But there are other facts to be faced that come much nearer home. There are hallucinations which can only be explained if more emphasis is thrown on those motor accompaniments that Lotze would fain keep in the background; there are pathological cases which make it difficult to say that memories never perish unless we boldly add that they retire into some inner sanctuary, there is also the damaging admission that people differ in the kind of memory each possesses, for some have memory for places, others for words, all of which suggest a close relation between memory and the sensory basis. It is certain that all these points cannot ultimately dispose of the theory that the soul has an independent reality, and that the memory exists even when it fails to give outward manifestations of its existence But the question that must continue to haunt the reader is whether any profit really attaches to such a view, whether, after all, the opponent is not right when he says that there is no such thing as memory, there are only memories To choose between these two views is really to choose between psychology as applied metaphysics and empirical psychology.

After what has been said on memory, the subject of reproduction in general can be dismissed quickly. Psychologists of Lotze's type have no interest in elaborate theories of association They maintain that all ideas are equally reproducible, and the particular reproduction is dependent on nothing but the general conformation of consciousness. If we state this as the tendency to form mental series, and to repeat a series as a whole whenever a part is made prominent by circumstances or by increased intensity of thought (activity of the soul), we see at once the affinity between this view and that of Herbart, and its relation to associationism. Lotze's position here is that which appears as typically German at this period It belongs also to that British school which began under German auspices with Sir W. Hamilton, and has continued to speak of redintegration rather than association. As Lotze does not adopt the particular theory by which Herbart accounted for actual reproductions, and does not admit that there is any force in ideas that enable them to struggle with one another, he has to look elsewhere for the factor that determines any one set of ideas to occupy the attention He finds this in the feeling which accompanies the thought, for feeling is allied with interest, and this brings us back to attention, which gives the required activity. In another sense of the term, feeling is the equivalent of the total mental state, and this general feeling is also used by Lotze to explain the recall of ideas. There can be little doubt that this is an important factor, and that the groups of ideas which so often seem to come into the mind without cause are given their prominence by organic changes which themselves are due to still more remote causes rarely detected. This point Lotze derived from his knowledge of mental diseases, where there is more chance of studying the relation between general conditions and their accompanying ideas, but the principle is equally good in normal states

Feelings are for Lotze a distinct class of phenomena; they are not to be deduced from sensations or ideas, or any interrelation of these In his earlier works Lotze was more inclined to emphasize the physiological conditions of feelings; later he united with this a teleological ground of explanation. Feeling in general is the equivalent of harmony or disharmony, between a neural stimulation and the ordinary function of the nerve. When the harmony is retained—when, that is to say, the stimulus is neither too great nor too small—pleasure results, when the harmony is disturbed, pain is felt. But since the sensation itself is given by a nerve-oscillation, and every sensation is distinct from the feeling which may accompany it, we seem to have used up all the available machinery. The facts of analgia make it impossible to identify the process that underlies sensation with that which underlies feeling, a special centre for feelings is equally impossible. The remaining possibility is that a nerve may have two modes of action—the functional activity which ends in sensation, and a destructive or reconstructive activity known by the soul as feeling.

This explanation, which as a physiological hypothesis cannot be proved and as a psychological doctrine has no direct utility, is for Lotze a product of teleology. From the question of the *nature* of the feelings he turns to the question of their *purpose*. Purpose, in fact, becomes for Lotze a ground of complete scientific explanation, and is regarded by him as an essential principle of method. Psychology is applied metaphysic just for this reason, that the data cannot be comprehended under the mechanical formulæ to which the sciences of nature rightly restrict themselves; the life of the spirit is essentially purposive, and only to be interpreted in the light of purpose A feeling of pleasure or of pain seems a needless addition to the cognitive side of sensation. If we can know by touch that a thing is hot, why should we also feel it to be *too* hot, painfully hot? Here, indeed, is a metaphysical problem. But assume that the pain leads to a consciousness of action, or that the pleasure produces reflection on the psychic condition itself, then feeling is given a place in the system of life. It is the process by which consciousness becomes aware of itself, it is the agency that converts consciousness of objects into consciousness of self

The opponent could with no great difficulty brand this doctrine as idle speculation, but for one consequence upon it depends the explanation of impulse, desire, choice, and volition To describe these as operations of the organism before it acts is not a proceeding that satisfies everyone, it is too much like describing hunger as the condition of the organism before it eats. But if these subjects are seriously attacked, the centre of gravity seems to shift from one part of the exposition to another, from the physiological to the metaphysical, from the empirical to the speculative. This shifting is very apparent in Lotze From neural processes he passes to activities that have only "secondary" neural equivalents, from these to activities to which nothing physiological seems to correspond, finally, to new categories such as activity and value, that seem no longer part of the world in which we touch, taste, or smell. This may be a justifiable procedure The complexity of data may render all other treatments less adequate. The empiricist may acquire his convincing simplicity only by suppressing facts, the idealist may be wrong in neglecting the principles which science overworks; there may be room for a mediator, an idealistic realist—in a word, for such a man as Lotze.

It is an open question whether a psychologist can be an idealist or a realist. He should perhaps be simply a psychologist. But apart from collectors of detail and writers of monographs, history has failed to produce a psychologist who was not a philosopher of some kind, and it is notorious that a rejection of all metaphysics is the most metaphysical of all positions. The fruits of the sciences may be plucked by every chance comer; yet the tree that bears them must strike its roots deep or quickly wither away. Lotze's psychology has not perished yet For that reason, if for no other, it deserves a careful valuation, root and branch. The central problem is the question of method. Is psychology a branch of physiology, or a department of metaphysics? To call it a science is ambiguous. If by science we mean a natural science, what is the meaning of nature? Is there one nature for science and another for philosophy? Is metaphysics necessarily the antithesis of science? The answer depends on the most fundamental of all sciences—the science of categories, terms, or classification A new point of view, as opposed to a discovery of detail, is essentially a reform of the categories.

The term "metaphysic" merely denotes ontology, it implies, therefore, ontologism, or the manipulation of data under the category of substance Confining our attention to psychology, this means the explanation of psychic phenomena by the use of the term "soul" as equivalent to an underlying substance This was the essence of that rational psychology which Kant criticized The doctrine of faculties was really a form of this psychology, for one soul it substituted a group of souls, complicating problems without advantage Under pressure of criticism, the faculty-doctrine was converted in two ways some said that ideas were the ultimates, treating them ontologically in the end (Herbart); others said that a faculty was the name of a class of phenomena, a form of psychological nominalism Against this last position it is easy to bring the old argument of realism. If the phenomena are so classified on account of their real nature, the name of the faculty represents a real inner unity which controls the classification and makes it real. If, further, all the phenomena have an inner unity and constitute a genuine class, there may be a significant name for that unity. Taken in this sense, the term "soul" has significance, and psychology is the science of the soul.

The retention of the term "soul" is thus primarily a logical necessity; it is at once retained and transformed. In its new meaning it is the symbol of a new point of view The ontologist regarded the soul as a transcendent reality; here it is immanently real Kant is justified, we only know phenomena But the phenomena are not the cast-off clothing of reality, they are its concrete self, its flesh and blood. In psychology we can have no skeletons, there is no anatomy of the soul If we strain the term physiology so far as to speak of mental physiology, it is because the term has a kind of universality. As we may speak of life without necessarily meaning life of the body, so we may speak of physiology without thereby indicating only the physiology of plants or of animals The conservation of energy may be a law without any determination of the question whether we know all the forms of energy The very term phenomena seems, then, to be a term of art, a convenience of thought, and if it has not a correlative "reality" it is meaningless Taking the phenomena as aspects of reality, Lotze treats the two terms as equivalent to plurality and unity Both being implied in the given actuality of life, only one further distinction remains we *know* the plurality as object, we *are* the unity as subject

This discussion of the philosophy of psychology is made necessary by the fact that later writers use Lotze's results without repeating the process here briefly indicated The effect upon all those who share Lotze's position is seen in the following points While physiology is not rejected as irrelevant to the life of the soul, it no longer usurps the whole field as it did in the materialism of 1860 The double point of view is translated by such a writer as James into a distinction of knower and known, the "I" and the "me" Further, activity is restored to a central place as something without which it is not possible to present a complete statement of the facts Lastly, by a combination of the idea of process or activity with that of unity (the unity of consciousness), modern psychology revises the doctrine of association, and enters upon the phase which is distinguished by the predominance of "apperception," taken not directly from Herbart, but indirectly through Lotze The value of these and other results due to Lotze's influence must be considered as we reach them in their particular setting; here it is enough to indicate the place and circumstances to which they belong historically.

Some remarks may here be added on the contents of the last two books of the *Medicinische Psychologie*. They indicate the direction in which thought was at this time moving. After dealing with movement and impulse, Lotze develops his doctrine of spatial intuitions. He makes a careful analysis of the phenomena with full consideration of the work done in anatomy, physiology, and optics In spite of the objections which later theorists have brought against the results, this survey of the subject remains valuable, both for its historical importance and its intrinsic merits. In the third book Lotze undertakes a consideration of the development of psychic activity in health and disease The first chapter discusses the different states of consciousness Lotze confines his attention to those aspects of the subject which involve relations between body and mind Consequently, the outcome is really a detailed statement of what is involved in retaining the concept of the soul From the unconsciousness of swooning to the fullest "self-consciousness," Lotze traces the implied dependence of mental activity on physical conditions without admitting either that the whole matter is physiology (materialistic), or that it can be neglected as of no real interest to psychologists (spiritual idealism). The details which Lotze borrows from contemporary science are, at this date, either superseded or too familiar to need quotation More important than these is the spirit of real appreciation for the value of physiology to psychologists and of psychology to physiologists which Lotze here displayed. The cognitive series of states culminated in apperception Self-consciousness is not merely a clear idea of self, but a unity of ideas in a totality that is felt as such Here we see that the high tide of intellectualism has already turned; feeling is given a prominent and a significant place in the scheme. In agreement with this tendency, a long discussion of emotional states rounds off the chapter. In some noteworthy ways Lotze seems to anticipate later views. He distinguishes the "chronic" from the "acute" states. As in medical terminology, so here these indicate previous dispositions and "attacks" due to particular incitements. a distinction at least akin to that now recognized under the terms sentiment and emotion. Further, the part played by the body is carefully described He remarks (§ 438) that our thoughts and aspirations differ according as we lie or stand a contracted position of the body damps our ardour, in a listless attitude we cannot feel aggressive; anger subsides with the subsiding of bodily tension, even the higher emotions connected with appreciation of the beautiful and the good are compounded with freer breathing, quickened pulses, and increased sense of vitality, while repentance and sorrow are no mere judgments of moral failure, but also actual physical depression shown in relaxation of the limbs, reduction of breath, and a sense of oppression in the chest To this statement of Lotze in 1852, the James-Lange theory of the emotions added nothing essentially new

Over the remaining chapters, on development (instinct, innate tendencies), and on morbid conditions, we must pass rapidly. They follow strictly scientific lines, rejecting "innate ideas" in favour of modern theories which connect brain development and conscious activities, but never so as to regard physiology as a substitute for psychology Individual differences as conditioned by sex, temperament, and age are considered Finally, derangements of function are discussed according as they are more or less corporeal For Lotze mental derangements are psychic in origin and nature, but able to affect the organism in such a way that they become subject to the very conditions which they create. This seems the only position logically open to those who retain the "soul." (For theory of local signs see p 112.)

§ 3 Two of Lotze's pupils have attained eminence in psychology. Carl Stumpf (born 1848), Professor in Berlin, has written many works on psychological and logical subjects. Of these the best known is the *Tonpsychologie* (1883–90), *Ueber den Begriff der Gemutsbewegung* (1899), and *Ueber Gefuhlsempfindungen* (1906). Georg Elias Mueller, who succeeded Lotze in Göttingen (1881), wrote in 1879 the most complete discussion of psycho-physics produced up to that date. This was the work entitled *Zur Grundlegung der Psychophysik* Mueller throws emphasis mainly on the physiological side of mental processes. He gives to Weber's law a physiological interpretation He is the author of "the first systematic investigation in which the necessity of a special psycho-physical theory of attention is recognized" (Kulpe *Outlines*, p 444), and regards attention as equivalent to the reinforcement of centrally or peripherally excited processes from a source which was unfortunately not clearly indicated Mueller's work on memory is also well known, and has the qualities of elaboration and care, combined with experimental procedure, which are characteristic of all Mueller's work Stumpf's work is also primarily experimental, though its author has enlarged upon the subject of experimental acoustics so far as to attempt a new interpretation of psycho-physics Besides acoustics, Stumpf has devoted attention chiefly to the nature of space and of the feelings

§ 4. The "heroic age" of German scientific achievements contained the promise of new developments in psychology Apart from the expansion of other sciences, and its inevitable effect on the study of human and animal life, the works of Helmholtz and others were in part distinctively a new psychology The completion of this movement is seen in the life and work of Wundt Born in 1832, Wilhelm Wundt represents the third generation of the German scientific school At the date of his birth, Johannes Muller was about to accept the Chair of Physiology at Berlin. After taking the degrees of M D. and Ph D, Wundt became assistant to Helmholtz at Heidelberg (1857), later (1874) he became Professor of Philosophy at Zurich, making a transition from physiology to philosophy. In 1874 Horwicz and Wundt were candidates for the Chair of Philosophy at Leipzig. Wundt was elected, and became the successor of Herbart and Fechner, both as regards place and profession. Wundt's earlier preoccupation was with physiology. his career, in brief, has been a gradual transit from the microscopic study of nerves, through the general field of physiological psychology and psycho-physics, into the wider realms of social psychology and metaphysical speculation

The development of thought during the first half of the nineteenth century tended to show that spiritualism and materialism were equally exhausted. The Hegelian movement had roused its opponents to uncompromising dogmas, and the bitterness of their scorn for that "sanctified philosophy" was expressed in a cynical reduction of aspirations to facts, of generalizations to bald details Some kind of mediation was required, and Lotze, seeing this, struggled to reach a satisfying conception of the relations between physical and psychic processes. The work was only begun when Wundt entered the field; the method of attack still implied the maintenance of the substantial soul as the only basis for those who believed that the psychic life could not be resolved into physiological processes This is the general attitude assumed by Wundt in the years 1852–62, when he was writing the *Beiträge zur Theorie der Sinneswahrnehmungen* and the first version of the *Lectures on Human and Animal Psychology* The surrender of this standpoint, with the consequent liberation from the limits of the "soul-question," was the most important crisis in Wundt's development. Lotze wavered between a metaphysic of the soul and a pure psychological treatment of mental phenomena. Wundt shook off the fascination of the "real substance"; for "reality" he decided to substitute "actuality", from real being he turned to real doing, refusing to ask after the "agens" so long as the "actus" was the only datum.

It is not easy to grasp all at once the various phases of this attitude. In one respect its affinities are obvious As against the Platonic idea of the separate soul, Wundt stands with Aristotle, with Leibniz, with Hume and Kant. All of these had looked upon the life of the soul as the true object of study. Aristotle had taken soul and body as a given unity, Leibniz contributed the notion of limitless activity, Hume showed how little the concept of the soul affected the interpretation of psychic life. Kant, having made materialism and spiritualism alike impossible, declared rational psychology impossible, and left the mental sciences divided between epistemology and anthropology. The barren externality of a pure anthropology Kant himself relieved by admitting a psychology of the moral life and the idea of an æsthetic. The practical reason was the germ of voluntarism, developed in their own ways by Fichte, Schelling, Schopenhauer, and Beneke. But, as before Kant the work was mainly negative and concerned with the destruction of the soul as rigid entity, so after Kant the terms "spirit" and "will" were given a content entirely beyond the warrant of experience Wundt's position was adopted as a compromise between the phenomenalism of Hume or Kant and the voluntarism of Fichte or Schopenhauer. The result was not primarily a new doctrine, but a new method out of which a new doctrine might grow The attempt to construct *a* psychology was given up, in order that the study of experience might by degrees reveal *the* psychology. The distinction was subtle, but full of significance The greatest condemnation that can be passed on a science is to make it the peculiar property of an individual, to speak of a psychology with the addition of its author's name as a sign of its character is to relegate psychology to the sphere of inventions If it can be made a science, these distinctions must disappear in the gradual evolution of the one and only psychology.

The declaration that psychology must be based directly on experience is not original with Wundt Locke, Condillac, and Herbart had adopted the same attitude, not to mention Reid or Maine de Biran. The mere collocation of these names shows how indeterminate the concept of experience had been, and how great was the need of a fresh outlook. To this Wundt attained by first abolishing the tacit presuppositions of the earlier methods. He does not undertake to examine inner experience or outer experience as such; experience is merely the given events and the sequence of events As given, the events are neither corporeal nor spiritual. There is no *a priori* way of deciding whether they are by origin physiological or independent of physiological conditions. It is therefore the duty of the psychologist to employ all the available means by which they can be studied. The scope and method of psychology opens out from this methodological indifference; for in some cases pure analysis will be used, in others physiological conditions will be studied, in others there will be no way of approach except through the study of various forms of expression such as language, myth, art, and religion. This complex system is the true "method of psychology."

The conscious employment of all these means for the solution of the psychological problem makes the greatness of Wundt's work One other aspect of the scheme calls for special notice—the idea of experiment. In reference to this, Wundt made, in 1892, the following important statement "We must remember that in every department of investigation the experimental method takes on a special character, according to the nature of the facts investigated. In psychology we find that only those mental phenomena which are directly accessible to physical influences can be made the subject matter of experiment" Elsewhere he refers to experiment as the means by which we may so control our mental processes "that the disturbing influence which the condition of observation tends to exercise upon them is counteracted" By earlier psychologists the word experimental had been used to mean the method of observation, the inductive was opposed to the deductive process Here we have a characteristic advance While the previous schools were content to begin the science of thought with the observation of the senses, this experimental method enlarges enormously the subject of sensations, placing them, as it were, under the microscope instead of taking them in the gross. Of this method more later.

Next to the question of method or outlook, comes that of elements A brief statement of Wundt's views on this subject will preface the way for the later topics. Psychology begins after reflection has become possible; it is by reflection that we get the data. When we recall the impression that any particular experience has left on the mind, we distinguish in it three distinct elements—the image or idea; the reaction or feeling; and a third part called effort, impulse, or volition. These three form a unity, but they can be distinguished, and each can be studied separately.

The term "idea" is here used to comprehend sense-perception, memory, and images of fancy. The characteristic of the idea is that it is present to the mind in the form of knowledge; it is a specific way of knowing. Whether it is an actual image of a presented object, or the image of an object presented in the past, or an illusion, is not at first to be considered; the psychologist must begin with the datum, the image, and not confuse this with the *significance* of the image.

Psychologists of the earlier schools were usually in too great a hurry to reach the object of the idea, to settle whether it was or was not representative of reality. Wundt proceeds from the idea to its elements, the sensations; thence to the elements in the sensations, namely, strength or intensity, and quality. For its production the sensation is dependent upon a stimulus, which may be external (e.g. sound waves producing sound) or internal (processes in the sense-organs and the brain). Since the sensation, as the final result, may vary through conditions of the organism, it is necessary to treat it as dependent on internal as well as external stimuli.

The intensity of a sensation is never separable from some quality, but it is possible to change the intensity alone or the quality alone. We may strike a note on a musical instrument loudly or softly, changing the intensity; or we may strike two notes, changing the quality of the sound. Hence these elements of the sensation can be treated as distinct.

The intensity of sensations becomes a subject for scientific investigation when it is possible to find an exact measurement of different intensities. This was the object of the investigations which led to the Weber-Fechner Law, and Wundt's discussion of the subject is a valuable contribution towards its definition and use. As the method of the physicist is used in dealing with quantity, so in the case of quality it is possible to employ the method of the chemist. "So that, in splitting up our sensations into quantitative and qualitative units, we are analysing these mental states in a way which recalls the two chief directions of analysis of the material world without us" (*H. A. P.*, 66, Eng. trans.). On these principles Wundt then deals with sight and hearing.

This account of sensation, though no more than a brief indication of the salient features, must serve to illustrate Wundt's method. The place of this subject in the whole scheme of his work may be indicated by saying that sensations are the psychological phenomena associated with the afferent nerves. The next topic is the operation of efferent nerves and their function in the sphere of movement. This is introduced as a question about the immediate consequence of a sensation The answer is that every sensation, if unhindered, is followed by a muscular movement, called reflex We have, therefore, as simple elements, first the sensation, then the reflex movement These reflex movements are in a sense purposive, they subserve an end, and that end is another sensation For example, a sensation on one part of the skin produces a reflex motion of a limb to that part, and so gives a sense of contact at the same point. The whole process is determined by the structure of the organism, and results in an experience of the position of a given sensitive area To this must be added the fact that sensations at different points of the whole area of the skin are themselves intrinsically different. This qualitative difference in the sensations constitutes their character as "local signs," so that after experience of their position we recognize the place of a sensation as though that place was an original quality of the sensation This is applicable to the retina as well as the skin, for the muscular motion that follows a sensation of light is a reflex action that tends to bring the stimulus directly upon the most sensitive part, causing in the process a series of sensations noticeably different These reflex processes are accompanied by sensations in the muscles used. The result is an association of the muscle-sensation with the recognized local sign of the impression. Our adjustments to any given situation are therefore analysable into a sensation, the recognition of its situation, the reproduced idea of the muscle-sensation, and a consequent movement. In this way purposive motion arises out of reflex motion (which is originally in itself purposive, though not intentional), and the psychological explanation of the highest kind of movement or adaptation is achieved.

This part of the general theory has further important consequences. The idea of psycho-physical parallelism is now accepted, and it is assumed that processes can be treated in terms both of physiology and of psychology. A general principle of connexion has also been introduced under the name of "association," which is here not association of ideas, but a natural coherence of elements such as a sensation and a movement. Given these factors, it is now possible to see how there emerges from the chaos of sensations and reflex motions the ordered experience. The reflex motions become more easy in some directions than in others; paths of preference are established, practice and habit assist, and the individual acquires a whole system of experience before reflection detects its presence or its complexity. Then the ideas are described wrongly as innate, a remark that applies especially to the idea of space. Wundt is opposed to any view of that subject which does not treat the idea as a complex result. A very skilful exposition of the errors in measurement which are observable in simple experiments, a discussion of the part played by touch and sight respectively, and an application of the Weber-Fechner law to "just perceptible differences" in measurement by sight, lead up to the final statement that our idea of space is to be explained by the theory of complex local signs. The distinctive features of this theory, as stated by Wundt, are (*a*) the view that sight is not educated by touch necessarily, but that (*b*) the sense of sight is itself a kind of touch, since the skin and the retina are equally areas of sensation with local variation. Earlier theories had been troubled (*a*) by the factor of distance in vision, (*b*) by the inversion of the retinal image. Wundt shows how the first difficulty arises from starting with irrelevant notions; it is not the *object*, but the *sensation*, from which the psychologist must start, and the sensation is never "distant." The second problem is settled by an adequate knowledge of the ocular movements.

From sensations we may pass to feelings. Here again we find errors have arisen from failing to begin with "pure experience." It is usual to speak of sensations as "objective," feelings as "subjective." But this distinction implies the construction of object and subject; it implies that we are thinking of an object and its relation to us, not simply of the feeling as event. If we confine ourselves to the feeling as event, we find the whole class of affections includes both sense-feelings and the more remote idea-feelings. Hunger is not merely a sensation; it is a felt sensation. "The ultimate fact is that we sense and feel," so that the common distinction is really logical (derived from the idea of object and subject), and not psychological In psychology it is necessary to view ideas as produced from sensations, and to regard feelings as inseparably united with sensations, sensational complexes, and ideational complexes

A feeling is a simple and undecomposable mental state, it is indefinable, and consequently appears obscure if we take an intellectualistic view of it—" that is, explain feeling by reflecting upon the ideas among which it arises." From Descartes onward this error of method dominated most of the attempts to deal with feelings (*H A P*, p. 218) The principle of description used by Wundt is based on the difference between sense-feeling and idea-feelings The skin, the muscles, the internal organs all give rise to distinguishable feelings, the sense-organs unite feeling with cognitive values, and therefore tend to produce an apparent distinction between sensation and feeling. But in reality there is always some degree of feeling in a sensation, and this becomes noticeable in high degrees of intensity (e g when a light is dazzling). Similarly, we have continuous feeling of our inner organs, normally repressed, but capable of becoming objects of attention when intensified In addition to the separate feelings there is a total feeling which is *not* merely an aggregate of feelings, it is not decomposable, but has a qualitative unity which " corresponds to the ideational unity of consciousness." The best examples are the oscillatory and discordant feelings; "affective discordancy is directly derived from affective oscillation," as, e.g, in tickling, among sense-feelings, and in doubt among intellectual feelings.

As feeling is intimately associated with sensation and ideation, so also is will essential to feeling and feeling to will. Since volition does not always result, feelings may lapse into states apparently devoid of volition. We may therefore speak of the degrees of feeling as comprising feeling proper, or an affective mood, impulse, desire, or inhibited impulse. The foundation, then, is feeling, and every feeling is definable as a simple or elementary volitional tendency. We are not called upon to educe the will from some foreign source; nor can we add it on as a "faculty" to the other processes that enter into consciousness. One or other of these methods is usually adopted we are either asked to start with involuntary reflex motions, and then observe how the mind notices them and appropriates them, or we are told that will is wholly distinguishable from all other processes These are roughly the theories dictated respectively by the prejudices of materialists and spiritualists; they reflect the antithesis of science and religion. Wundt, to be consistent, must eliminate these prejudices, exhibit the unadulterated facts, and remain true to the idea of process as opposed to faculty. The result is a complete inversion of popular (and some scientific) accounts of will. Volition, we are told, is fundamental, desire does not precede will necessarily, it is repressed volition, choice is not the essence of will, for choice is itself a selection between volitional tendencies, will is not a conscious use of reflex actions converted into volitions by the addition of conscious choice, for the reflex actions are themselves simply primary volitions. In brief, whichever way we turn we are met by the fact that volition has no antecedent; it is original. Every sensation and every idea has its own affective tone, and so far is an elementary volition The total state is distinct from the sum of these parts, and it is this total state which is at once the unity of self and the basis of external volition—the action which we usually identify with "an act of will."

The analytic movement of this doctrine is now complete. The result is obvious What is to be said about consciousness is now said; for it is the name of a totality whose parts have all been discussed. The apparent separateness of the parts is only a necessary illusion of method. Psychology is like physiology in this respect: it distinguishes and names parts without continually recalling the organism to our minds, but implies throughout that there is an organism. After the analytic movement comes the synthetic view; for the phenomena which result from the combination of all these parts have to be considered, and this phase of the subject falls outside of the consideration of the parts themselves.

Consciousness is a name for the total state involving sensations, ideas, feelings, and volitions. It is a unity, and at the same time a plurality As a plurality it suggests the question, How many ideas can be in consciousness at once? The answer is dependent on the question of degrees of consciousness, and really means, How many distinguishable elements can be clearly held by the mind? In addition to these there may be an infinity of indistinct elements. This leads to the separation of perception from apperception, the doctrine of Leibniz which Wundt adopts, with emphatic exclusion of any metaphysical implications "The perceived ideas are those which lie in the field of consciousness, while the apperceived are situated at its fixation-point" Apperception, introspection, attention are all names of complex processes involving ideas, the outstanding character of some ideas, and the feelings associated with fixation, such as strain of the muscles of the forehead in thinking or tension in the ear in remembrance of sounds None of these terms can be legitimately used for operations brought to bear on consciousness introspection of experiences is itself simply a way of experiencing; attention to an idea is a way of ideation, all attempts to explain these terms as implying that the "self" turns round upon and regards mental processes objectively are condemned beforehand by the assertion that the processes in their totality are what we designate by the term "self"

We have arrived, then, at this position. The object of study for the psychologist is a complex system of processes As processes, none of them is ever repeated or preserved. We cannot think of consciousness as storing up ideas, nor of ideas as emerging on the theatre of action from some obscurity "behind the scenes"; ideas are not entities, but events. Yet there is a distinction between the total state at any given time and the presentation of the moment.

Attention may be determined "by more remote conscious tendencies which have arisen from previous experience and are not directly related to the particular impressions of the moment." It is this that produces the impression of activity; for though all processes as such are activities, there is a special idea of activity associated with the relation between established dispositions and the chance stimulus. We may distinguish, then, a passive and an active form of apprehension, corresponding to the fundamental forms of creative activity, impulse and choice. As voluntary action arises out of the total state thus produced, we are now told that "apperception is the one original act of will: it can exist without the consequences which follow upon other acts of will, whereas these always presuppose as their condition some internal act."[1]

As we remarked above, Wundt's career as a writer began in the region of 1860. The date is significant, because it shows how naturally Wundt assimilated the spirit of the speculative and constructive thinkers who adorned the first half of the nineteenth century. Wundt is not only a psychologist, but also a logician, a metaphysician, in the widest sense of the term a philosopher. A complete estimate of Wundt's psychology must therefore take some account of the ideas which belong primarily to the wider sphere of philosophy, but none the less suffuse the pages of psychology. At the cost of a little repetition we must summarize a few of the relevant points

The ultimate elements of the psychic life are sensations and feelings. But experience gives us only complex states; the elements are, therefore, no more than resultants of a logical analysis. The science of psychic phenomena really begins with abstracted factors, hypothetical ultimates. Though in English we use for *Empfindungen* the old term

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[1] Külpe, *Outlines*, p. 426 (Eng. Trans.) remarks that Wundt "has realised that the 'having' of an idea is not identical with its attentive experience"; also that this is not Herbart's doctrine revived nor Kant's "transcendental apperception." In fact, it seems to me to be the original Aristotelian distinction of *ἔχειν* and *θεωρεῖν*! Jodl (*Lehrbuch*, p. 443) objects to the use of "apperception" for a process which involves attention; this, he thinks, introduces confusion, for Herbart's "apperception" does not involve attention, but is simply a process through which a given consciousness takes up into itself new elements or tries to take them up (Stout's formula as quoted),

"sensations," this fact must not be allowed to obscure our recognition of the difference between Wundt's doctrine and the doctrine of Locke about "simple sensations" Similarly, as Locke's "elements" were concrete experiences capable of union or separation, Wundt's elements are far more metaphysical, and call for a deeper analysis of unity. For Wundt an experience is always more than a sum of parts: it is something new, something created, and depends upon an activity called "creative synthesis" Looked at from this angle, an individual's psychic life is not made up of events describable as the meetings or partings of ideas (or even sense-data), but is a perpetual creation It is in the light of this conception that we see the real meaning of Wundt's term "will" The will is that fundamental activity which sustains experience in the making

At this point, also, we touch the core of Wundt's distinction between the psychical and the physical processes. Physical processes, the content of the physical sciences, are known mediately and treated in abstraction from the observing subject; psychical processes are known immediately, for in them the subject becomes actual and in knowing them knows itself. This difference is further developed into a difference between quantitative and qualitative causality. The product of the factors in the physical world is equivalent to the sum of the factors, and can be again resolved into those factors In the psychical world the result differs qualitatively from its (antecedent) factors; therefore here, and here only, we find a truly progressive movement. Since creative synthesis is characteristic of all psychic activity, the result is both effect and end: the antecedent, conversely, is cause and reason. When this principle is applied to the whole evolution of humanity, it serves a double purpose and constitutes the principle of psychogenesis. History, then, is to be closely connected with psychology; for the record of progress is a record of the stages through which psychic activity has continually summed up its own content and generated qualitatively new products. The cosmic application of this principle of psychogenesis shows how the lowest (reflex) activities subserve the production of higher personal activities, and these again produce the superpersonal system, the activities of the organic community. The climax, later in time and in logical expansion, of this scheme is the exposition of the "folk-soul," a task which Wundt undertook in his *Völkerpsychologie* (see p. 291).

Length of life and indefatigable industry added to great abilities have given Wundt an almost unrivalled preeminence among psychologists for half a century. On a broad foundation of physiology, experimental psychology, logic, and metaphysics, Wundt has raised a monument of literary production surpassed by few, if any, individual efforts Criticism cannot detract from the abiding merit of this great achievement, not criticism but the passage of time reduces to their imperishable elements the vast bulk of these labours. A detailed statement of the fate that has befallen each part of Wundt's system cannot be attempted here Some parts, especially the voluntarism and the doctrine of creative synthesis, have leavened psychology in every part of the world On the side of direct stimulation to work, the laboratories for experimental research testify to Wundt's influence Neurology, psychology, and the social sciences often echo the words of the master But with all due allowance for solid results, it must be admitted that the glamour of Wundt's psychology is no longer enthralling Apart from technical points, the great question which forces itself upon psychologists is that of outlook and method. From some quarters there have come authoritative assertions that Wundt's psychology never actually reached the living reality. Can psychology really progress if it is a compound of innumerable disconnected data derived from carefully arranged experiments and supplementary metaphysical assumptions? Is the immediate total experience ever reached by these roads? The so-called Wurzburg school (p. 282) have had their quarrel with Wundt, and may be regarded as the most damaging secession which the Leipzig school has suffered, In America the influence of James and the Pragmatists has tended to reduce the estimation of pure experimental psychology: the varieties of experience, religious or otherwise, cannot be sought *only* in the laboratories. In short, the new psychology of 1880 is now a little old, a little disillusioned, a little wiser and sadder. But no generous student of history would care to emphasize this change of mood as a disparagement of the life-work of Wundt. Progress is itself a kind of critic; but it does not despise the things it must discard.

§ 5. In addition to the systems of psychology which were built on the scientific work of the century, important revisions of method were also advocated under the influence and protection of the same movement. The works of Ernst Mach and Richard Avenarius are the chief examples of this new doctrine of method.

Mach entered the field as a champion of physics and a declared enemy of metaphysics His polemic was directed against every doctrine and every method which did not begin and end with elements and analysis This was an extreme view that could not benefit psychology in more than a limited part of its area. The general doctrines of "economy of thought" and of the identity of physical and psychic elements have importance for philosophy as a whole, and may be regarded as part of a logic of the sciences: they could be applied to any science, and do not belong peculiarly to psychology But in his *Analysis of the Sensations* Mach uses these principles to show how they can be applied to the subject of psychology. The work has had great and well-deserved influence It is a model of acute discrimination, and as an exposition of method may be ranked as a masterpiece But a doctrine of method does not by itself make a science, and the success which attended the analysis of sensations could not be repeated elsewhere at will The deduction of a complete psychology from these premises was therefore an error: the criticisms which Mach passed upon the scientific principles of his day helped to produce a new outlook in the sphere of physics and physiology, but the constructive part of his work ended in a complication of elements (sensations) which could not in any degree of complexity produce the required result For psychology it would appear that Wundt's conception of synthesis and of a fundamental difference between psychology and physics was better and truer than Mach's scheme of analysis.

The real centre of Mach's theory is the idea of evolution as affecting the origin and value of concepts. He approaches this evolution through the history of ideas, and thereby differs from Avenarius, who looks primarily to the evolution of the organism as an individual instrument. The *Kritik der Reinen Erfahrung* is not a treatise on psychology; it is primarily a study of scientific thought; but the strong leaning to biology which Avenarius shows makes his work of interest to psychologists. The idea of "pure experience" involves a wide programme of reform The soul, as a principle of explanation, is to be discarded the processes of knowledge must be described without reference to a soul, and this is ultimately achieved by a new psychology. The spirit and the letter of this new scheme are both biological. The organism is subject to changes which disturb its equilibrium. In accordance with the general principles of life, there follows an attempt to regain the lost stability, and the whole movement from the first stability to the second is called by Avenarius a "vital series" The terminology and the symbolism which Avenarius employed were chosen to assist his main purpose, namely, exclusion of all metaphysical implications. A "vital series" is, in plain language, a sequence of changes in the psycho-physical organism it begins with a disturbance and ends with the natural subsiding of the disturbance It may be described in terms of body or of mind indifferently. as, for example, we may follow an individual's experience from the first shock of astonishment to the last degree of contemptuous familiarity, and describe it in terms of nerves or feelings. With this beginning it is easy to see that there is a progressive element in experience. The course of a vital series can be repeated, and is traversed with less total disturbance of equilibrium at each repetition. Biologically, this is equivalent to the formation of habits, habit being the usual name for sequences in organic life which, by reason of established connections, are automatic and economical. If this scheme is accepted as a profitable method, it is clearly possible to extend its operation over the whole field of human development, thus attaining, in terms of a simple unit-process, a complete system of evolution. Our interests do not carry us into that subject. But Mach and Avenarius were both forces tending toward the advance of a more strictly scientific psychology. While men of less intelligence were still hankering after a psychology which would cover both romantic animism and psycho-physical analysis, these two thinkers emphasized the necessity of making science more scientific: they measured accurately the difference between an anthropomorphic doctrine of the soul and a truly objective treatment of psychic phenomena. Every sign pointed at the time to the desirability of seeking for fixed (conceptual) elements, and treating complex states or events in terms of these elements. As a method, this must necessarily make psychology less and less like the popular conception of a "soul-doctrine." As we see it in the work of Muensterberg, this doctrine of method demands and welcomes an open rupture between the concepts of psychology and the "values" of life.

CHAPTER III

REPRESENTATIVE TYPES OF THEORY

§ 1. THOUGH Wundt and his work rightly claim the first place in any account of modern German psychology, there are many other active forces to be recognized and many different directions of thought to be recorded. In dealing with these we come ever nearer to the limits of history, until finally we reach the living present and lose perspective For that reason this chapter cannot be more than an indication of current thought, and the organization of its material can only be arbitrary and tentative. To avoid chaos, some outstanding features must be selected and the chief productions of the period grouped accordingly. The general plan will be as follows (1) first the tendency to emphasize physiological or biological considerations will give a definite place to one group of writers, (2) then the cognate tendency to affirm the principle of association and reject apperception leads to theories of a possible reconciliation, (3) the divergence from Wundt which develops in the Wurzburg school introduces another important type of theory; while (4) the emphasis laid on introspection forms the most complete antithesis to our first group and marks another way of thought In actual exposition these various writers are not always sharply distinguishable, but at this stage only general descriptions can be attempted.

During the last quarter of the nineteenth century the more eminent psychologists uniformly complain that the subject of feelings is the most obscure part of the science. For many reasons this subject steadily acquires importance as the century draws to a close, and it may usefully be regarded as one of the directing lines in the historical development. For this reason a few pages will be devoted to the attempt made by Horwicz to construct a psychology entirely on the basis of feeling.

In the region of 1850 two antithetic lines of development were still running parallel—the older Hegelian and the newer naturalistic lines. The former waned as the latter waxed, and the single outstanding feature of the next fifty years was the advance of physiological and biological conceptions The Hegelians, represented by Erdmann and Schaller, were doomed from the first by the fact that they treated the feelings as a phase of the dialectical movement, which was supposed to explain the evolution of the spirit in man. As the physiological basis is not known immediately by consciousness, it was disregarded The failure of Hegelian psychology was mainly due to this belief that what is not itself a phase of consciousness cannot be used to explain consciousness, a point of method which ultimately rules out physiology, neurology, and natural evolution. The wider basis taken by Lotze in his *Medicinische Psychologie* (1852) furnished the most authoritative and effective foundation for the new developments In this we find emphasis laid on the action of nerves and muscles, vital activity, and reflex action. Lotze himself was inclined, in his later writings, to say less about those things, but scientific interests made his earlier work more effective among his contemporaries than the later productions Much to his annoyance, in later years Lotze was often quoted as a supporter of the purely mechanical interpretation of life and mind. In reality both Lotze and George (1854) were attempting to give due weight to both the mechanical or involuntary movements and the consciously-directed system of actions The feelings were regarded as concomitants of neural action, either in the sense that excessive action is pain, appropriate action pleasure, or in the more general sense that pain is the lowering, pleasure the raising, of vital feeling. If the latter view is restated on the assumption of a natural impulse to live, psychology can be constructed, as by Fortlage (1855), on the basis of impulse alone. Of this particular attempt we may say that it lacked inductive method, and consequently was simply pseudo-scientific

The Herbartian school more or less strictly followed the master's doctrine that feeling is reducible to relations between ideas. An attempt to make this view acceptable in a new atmosphere is seen in J. W. Nahlowsky's book, *Das Gefühlsleben* (1862; second ed., 1884; third, 1907). The new point in this work was the union of the original doctrine with Lotze's conception of vital activity. The struggle of the presentations which Herbart formulated as a doctrine of conflicting or co-operating energies, added and subtracted mathematically, here loses its abstract nature and becomes a concrete exposition of desires and feelings. But the essence of the Herbartian doctrine is that presentations are original. Consequently, feelings are derivative, and must either depend on ideas or come into the circle of ideas, as it were, surreptitiously. Nahlowsky abandons the theoretical basis so far as to distinguish between lower and higher feelings—that is, between feelings as dependent on sensations (colours, sounds, and the like) and feelings dependent on ideas (æsthetic, moral). The former can only be treated physiologically, and if it is maintained that the physiological process, by increase or decrease of activity, produces *felt* differences, it is no longer possible to avoid the argument that this doctrine requires for its completion a theory of the unconscious.

So at least thought Hartmann, not without a prejudice in favour of that theme. He, more even than the others, consciously aimed to reconcile the philosophers and the physiologists. As idealist, he thinks a feeling can only exist in consciousness; an unfelt feeling is an absurdity. He thinks, too, that all feeling is either pleasure or pain; further, qualitative differences are really differences in the accompanying sensations or ideas. But these sensations and ideas have their degrees: they sink below the threshold of clear envisagement; they persist in some degree, and their existence is revealed by the dim, uncertain character of the total feeling. Passing by the difficulties of the "primitive atoms" and the synthesis of these "atomic feelings" into feelings "above the threshold" (all of which is a medley of Herbart, Haeckel, Schopenhauer, and Darwin), we can do justice to the fact that Hartmann came by this devious route to a very adequate recognition of the complexity of the emotional life. His "absolute Unconscious" (*vide* p. 199) might not command entire acceptance, but he had made a new era by not only accepting the physiologists as his allies, but also engulfing them, as it were, in the bottomless depths of his metaphysics.

The last extreme step in this development was taken by Horwicz. Here the situation is inverted, and in place of efforts to adjust the feelings in their relation to the rest of psychology we find psychology as a whole adjusted to and based on the doctrine of feeling. Adolf Horwicz (1831–94) entitled his work *Psychologische Analysen auf physiologischer Grundlage* As he himself remarks, the title was like many others, but the book, unlike others with the same title, was true to its name The work appeared in three parts at intervals (1872, 1875, 1878), and there are signs that the times moved faster than the writer. The first part is a general exposition on the lines of a modern textbook—that is to say, it begins with the physiological propædeutic, deals with sensation, consciousness, reproduction, association, and analysis of our "ideas" Though now obsolete, the physiological part of the work deserves praise. Without being original, it is well selected, and also successfully combined with the psychological parts Horwicz had learned something from G H. Lewes in this matter. In the second and third parts we find the author obviously feeling that Wundt's work had already passed the limits of his own ambition, and so continuing to the end with a novelty that had already ceased to be new.

Between the publication of the first part and the issue of the second (*Analyse des Denkens*) Horwicz had time to read his critics and estimate his own success. He finds it necessary to tell the public what points they had missed. These were primarily the relation of sense-feelings to common feeling and the reduction of memory to a gradually complete reaction of feeling. In other words, Horwicz had reduced everything to feelings, and he continues that process in the *Analysis of Thought.* The basis is the neural system and its functions. The ideal for psychology is to reduce all forms of psychic activity to elements which are as well known in their physiological aspects as the sensations. A sensation is a nerve-movement, and the new cerebral physiology indicates that the brain has sufficient complexity to justify the assertion that the higher processes are analysable into complications and irradiations of the primary nerve-cell excitations. Horwicz thought that Darwinism supported his view of feeling as the original form of all consciousness; feeling leads to movement, which, as the reaction of the organism, is equivalent to primary involuntary attention. Sensation is purely subjective: in itself it conveys no knowledge, for we have to learn that an objective stimulus of a certain kind is its cause. Feeling is always accompanied by impulse to act: sensation is always incipient movement. The coexistence of these gives the higher complex state in which there is tendency to motion and choice of possible movements. Thinking is a process in which we anticipate the results of action, and consequently feel inclined to one course rather than another. Though the "metaphysicians," whom Horwicz dislikes, have attached great importance to thinking, it is, on this view, no more than a sequence of ideas controlled by feeling and accompanied by more or less obscure movements. It might be said that "abstract" or theoretical thinking could not be covered by this description. To meet the objection, Horwicz explains that all search for causes is the satisfaction of feeling. We stumble, and then go back to see what caused the stumbling, so that we may feel more sure about our future course. The most complex science is not different in kind from this simple procedure. It is an elaborate satisfaction of feeling achieved through the driving force of desire (as felt), ultimately the desire to gain pleasure and avoid pain. We are, of course, exhorted to take the terms "pleasure" and "pain" in no Cyrenaic sense, but as equivalent to the increase or decrease of vitality.

The last stage of the *Analysen* was a work on the feelings, which seems to have fallen flat, and was criticized as neither original nor useful. In fact, Horwicz was more intent on constructing psychology from the basis of feeling than on producing a psychology of feeling. In spite of the many defects in this work, there are elements of distinct historical interest. We may grant that it fails at the crucial points.

It does not prove that feelings exist at first apart from all other psychic modes; and it does not satisfactorily generate knowledge out of feeling; while ultimately its physiology lapses into schematism and false analogies. But on the other side must be reckoned the many subtle observations of detail, and the broad fact that Horwicz had a true sense of the course which psychology would follow He does not pose as a materialist, but he coins the significant phrase, "Ohne Blut keine Gedanke" He uses the concept of feeling to attain a unified view of consciousness, adopting a method which was to be more successfully handled by those who took will for their unifying factor He faces squarely such problems as that of "synthesis," and makes an honest attempt to show how unity of conscious life is conditioned by the neural substrate and its complex network of cells. He makes, in short, the kind of contribution to psychology which was to be expected from a physiologist, and he disappoints our expectations because he is not a physiologist capable of making the required inductive researches

§2 The period from 1860 to 1880—the era of G. H. Lewes and Spencer in England, of L Dumont in France, and of Horwicz in Germany—shows the beginning of a desire to explain the "problems of life and mind" from a new point of view and a new basis The inspiration of these writers was drawn from the widest outlook on nature, the first glimpses of a comparative psychology The next decisive movement was to be produced by a fusion of two methods, one dependent on expression and the other on introspective analysis. The "expression of the emotions" is a subject which for the British mind is inseparably associated with the name of Darwin Spencer, Piderit, and Wundt have made contributions to the same subject. The principal interest in these works was centred on the origin of the movements which express emotions, and the possibility of showing that facial or other expressions were the residues of primary actions So, for example, Darwin explained showing the teeth in rage as the residue of the earlier and more barbarous process of actually biting.

It was theoretically maintained that these manifestations of emotion were only the outer signs, and that, however much these might be repressed, some physical expansion or contraction was a concomitant of every emotional state. The experimental proof of this was given by Mosso and Féré. Angelo Mosso, Professor of Physiology in Turin, wrote a book on fear (*La Paura*, 1889), which quickly became a classic of its kind. Charles Féré, a pupil of Charcot, wrote on *Sensation et Mouvement* in 1887 In the same year Carl Georg Lange produced his famous monograph, *Ueber Gemüthsbewegungen*, which has close affinities with the views that James propounded as early as 1884 in *Mind* and restated in his *Principles* (1890). The development and significance of the points common to those works show the general character of the change which came over the theory of emotions during that period

The general trend of movement was here, as always, from the more to the less obvious, from the outer to the inner, and in the main centred upon the importance of the vasomotor system. Mosso invented apparatus for measuring the expansion and contraction of the lungs and the blood-vessels, thus bringing these modes of expression under experimental control Féré conducted researches chiefly on muscular energy, and believed that the general outcome of his experiments was the proof that appropriate stimuli cause expansive activity, inappropriate stimuli cause contraction.

The general emphasis on these organic phenomena, particularly the variations of blood-pressure, took effect on psychology in the form of a theory that what is called an " emotion " is in reality a reflection in consciousness of the organic changes taking place. This may be called the " peripheral " theory, to distinguish it from the opposed " central " theory. The peripheral theory can be so called because the essential feature is the emphasis laid on the order of events : first comes the objective stimulation of the senses ; then the inner organic changes and consequent movements ; finally, the consciously recognized state of mind. Briefly and in concrete · we see a bear ; we have a sudden redistribution of the blood, the heart beats more strongly, the legs move rapidly in a manner that increases the distance between us and the bear. The observer, or our self when normal, declares we were frightened. A fondness for popular expressions, and a tendency to such epigrams as "We are sad because we weep," enabled James to advertise this doctrine, but made the consequent ideas about it obscure.

Lange and Sergi in Europe, James in America, have been the principal exponents of this teaching. It has met with vigorous criticism, chiefly on the point of identity; for James said (at one time) that the muscular and other organic readjustments were the emotion,[1] a pure identity of physiology and psychology which the author did not wholly mean nor finally defend. Though the phrase "James-Lange Theory of the Emotions" is now widely current, it is not an exact title of anything. Lange (and Sergi) were openly discussing the physiological aspects of behaviour in what people usually call "emotions." James was attempting to show how far the cognitive aspect of the total state or condition was qualified by emotional factors. In other words, James meant to say that an "idea" (e g. idea of the bear) does not cause emotions as a match might be said to cause a fire; but along with the "idea" there is a total organic reaction which makes the "idea" itself a unique personal event, and welds it into that concrete psychophysical process called experience In these broad features the theory still survives It has that kind of vitality which provokes strife and enjoys change. One obvious defect in the whole movement from Lotze onward is the fact that physiological considerations abound, to the exclusion of the equally important data of chemistry. This last phase of psycho-physiological doctrine we take as the limit of its history, and shall therefore not venture to give any account of its present state beyond indicating that, if the main point of the peripheral theory is as stated above, the further study of bodily changes, which reaches to changes in chemical processes and in secretions, is on the whole inclined to amplify rather than annihilate it.

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[1] *Mind*, vol. 9, 1884. "The bodily changes follow directly the percep-

The whole purport of the peripheral theory is condemned by the supporters of the central theory, namely, Wundt and those who partly or completely follow him. Historically, this view may be regarded as a development of the Kantian; for Kant leads the modern school of thinkers who insist on (*a*) giving to feeling an independent position, and (*b*) regarding it as the subjective complement of the objective processes (sensation, ideation). We must remember, of course, that in the strict use of terms these are all subjective processes, and that the distinction is ultimately between more and less subjectivity.

Wundt regards feeling as equally original with sensation. He therefore differs from Herbart, who would derive feelings from relations between ideas, and Horwicz, who would derive sensation from feeling. If we call the former an intellectualistic view and the latter a physiological or biological view, we may distinguish Wundt's as a psychophysical doctrine. As such, it is a species of the general class of theories previously called "central."

The reader of these pages has probably felt some uncertainty about the meaning of the terms "sensation" and "feeling"; still more about the relation between those psychic states. The uncertainty is natural, because it exists also in the writers who have been discussed, and Wundt has given a clear statement of his position on these points. "Sensations are present in all immediate experiences, but feelings may disappear in certain special cases, because of their oscillation through an indifference zone. Obviously, then, we can, in the case of sensations, abstract from the accompanying feelings, but we can never abstract from sensations in the case of feelings. In this way two false views may easily arise—either that sensations are the *causes* of feelings, or that feelings are a particular species of sensations." These two views being rejected, Wundt puts forward his own view that feeling can be most generally described as the reaction of the total consciousness upon the incoming sensations or ideas. This reaction is not a purely psychical and, as it were, disembodied process: it involves physiological factors. When we have "psychical compounds made up of affective elements" (emotions, volitions), the expression clearly shows the presence of such factors, and we may therefore assume that probably some physiological accompaniment exists in the case of simple feelings. Wundt conjectures that "in the case of feelings and emotions we have chiefly changes in inhibitory innervation, originating in the brain and conducted along the vagus (etc.)." Further, Wundt thinks there is one central region of the brain which serves for the "connexion of the various sensory centres" and also for "inhibitory innervations." For further details the reader must go to Wundt's writings these extracts are made to explain the terms "psycho-physical" and "central" The standpoint is psycho-physical because it makes feelings independent psychic events and at the same time postulates a physical complement, but does not reduce either of these terms to the other. It is central rather than peripheral because the feeling, being irreducible, cannot be explained as a direct reflection of the incoming current of the sense-nerves through outgoing motor channels.

Wundt's further treatment of this subject becomes an elaborate schematism of classification. In this the most obvious feature is the use of certain fresh principles. The writers of the eighteenth century classified the feelings by objective marks, as self-regarding, other-regarding, and so on. The more strictly psychological method then adopted was to reduce all feeling to pleasure and pain, leaving the differences to be defined by reference to sensations or contents (æsthetic, intellectual, religious, political, etc.). Wundt treats the feelings as a "single manifold, interconnected in all its parts," and distinguishes certain "dimensions" (agreeable and disagreeable, exciting and quieting, tension and relief). This treatment has not commanded any general acceptance. For Wundt, emotions are equivalent to a succession of feelings, and are accordingly treated as complex forms of feeling. The names for emotions are consequently names for typical groups of feelings, not for certain invariable and definable psychic states The physical phenomena have only a symptomatic value, and do not give any reliable knowledge of the emotional experience. James is said to have mistaken symptom for cause, and therewith dismissed.

Wundt attempts to characterize the typical forms of emotion (relying on his earlier treatment of feeling), but virtually denies the possibility of making an adequate classification, partly because emotions occur in times and circumstances not suited for the experimental methods, partly because the possible permutations and combinations of the factors (quality, intensity, form of occurrence) have no known limit. In this part of his work Wundt seems to assume that an inductive study based on observation can have no scientific value. One of the points at which later psychologists diverge from Wundt is this very conception, which practically amounts to the dogma that what is not subjected to the conditions of the laboratory is not scientific psychology (cp. p. 282).

Lehmann's work (*vide* p 270) is an attempt to satisfy the demands of the "peripheral" and "central" theories by compromise. On the one side, it gives full weight to the physiological data and the views of Mosso, Féré. Experimental work of great value has been done by Lehmann in the construction of tables showing the physical disturbances that accompany emotional strain. On the other side, attention is given to the psychical variations (especially in the matter of the accompanying images). Lehmann accounts for the origin of emotion on purely physiological grounds: the course of the ideas during emotions involves loss of energy, the feelings are the reflex psychic effects of harmony or disharmony between supply of and demand for energy. This hypothesis seems to be one of those which cannot be proved, and might be disregarded Lehmann accepts only two qualities in the sphere of feelings, agreeable and disagreeable, thus joining those who reject Wundt's "dimensions."

§ 3. The physiological bias which characterized Horwicz is seen again in the work of Theodor Ziehen, *Introduction to the Study of Physiological Psychology*. This work is one of the best-known textbooks. Ziehen, afterwards Professor in Berlin, wrote it in 1891, when he was at Jena; it has attained to many editions in German and in English. It is marked by directness of expression, firmness of opinion, and a broadminded disregard for consistency. Ziehen's basis is neurology. His main points are the doctrine of association, the futility of "apperception" (especially Wundt's), and the supreme value of experimental work. "Association of ideas," says Ziehen, "is a brief term designating the process of the reproduction of ideas." The chief law is that "each idea reproduces as its successor either an idea that is similar to it in content, or an idea with which it has often appeared simultaneously." Here, then, are two principles—similarity and simultaneity or synchronism. These may also be termed internal and external types of association. The explanation of the "process" assumes sensory-cells and memory-cells. Ziehen admits that this physiological substratum is "wholly hypothetical as to particulars," but claims that it is "absolutely correct" in its fundamental features.

Wundt's "apperception" is here called an "over-soul" and rejected as superfluous. All unification is traceable (if at all) to the brain-cells in their relative excitability. The reason why a sensation *a* becomes associated with a memory image *b*, rather than any other, is found in the fact that the corresponding ganglion-cell B, and the paths of conduction leading to it, have been trained or "tuned" by previous excitation, and are proportionately more sensitive to similar excitation. This, as the author notes, was Bonnet's principle, and Ziehen is, in fact, re-editing the "fibre-psychology" with the help of Meynert and other physiologists. Similarly, attention is analysed into the action of sense-stimuli, which prevail over the other competing stimuli through resemblance of the new sensation to the old, and the distinctness of the memory-images which are recalled or associated with it. Attention is determined by the "associative power" of a sensation, which is dependent on (1) intensity, (2) agreement with the latent mental image, (3) strength of the accompanying emotional tone, and (4) the chance grouping of the latent ideas. The belief that we exert a particular kind of "activity" in attention is due to the fact that more or less latent movements accompany our thinking. There is no real distinction between so-called voluntary and involuntary thought. "We cannot think as we *will*, but we *must* think as just those associations which happen to be present prescribe." With this dissolution of "the will," and a corresponding statement that the ego is "a peculiar complex of associated images of memory," we reach the logical conclusion of a purely deterministic physiological psychology.

Though drastic in his analysis and his use of doubtful quantities like memory-cells, Ziehen does not venture to exclude altogether psychic factors for which there are no available physiological bases The projection of sensations in space and time is one of these. Also there is the question of fine details of action, where the total result of the stimulus seems to contain elements not easily explained without psychic factors Such points are commonplaces of the criticism directed against completely physiological explanations of behaviour Ziehen meets them by admitting the gaps in the parallelism, but he seems to override their importance by an optimistic belief that time and patience will provide all that the present, confessedly inadequate, physiology lacks Clearly the failure is in the physiology; for we have the psychological facts, and nothing would be wanting if we were not bound by preconceived ideas to search for some material substratum The physiological psychologist has a curious way of declaring that psychology must remain incomplete so long as physiology is inadequate —as if one might say that the water supply is inadequate because there is no vessel to hold it. Ziehen thinks apperception is to be dismissed because there is no centre for it—that is to say, no brain-vessel to contain it Wundt's particular localization may be unfortunate, but the argument that this "metaphysical" item must be discounted for want of room is itself neither more nor less than an applied metaphysic.

§ 4. The antithesis between association and apperception becomes in Ziehen and others so marked that it seems as if psychology must either overcome it or degenerate into faction. The most important effort to achieve reconciliation was made by Münsterberg, and constitutes one of his distinguishing marks. Hugo Münsterberg may be included among German writers because he was at least equally divided between Germany and America. Born in Germany, he became Professor at Harvard, originally a writer in German, he has published works in German and Anglo-Saxon indifferently. Originally known as an associationist in psychology, he later became responsible for a type of activism (*Aktionstheorie*) with idealistic tendencies In experimental work Munsterberg has taken a continuous interest, and in recent years he has been prominent in the field of applied psychology To this phase of his work we cannot give any further attention beyond naming the following titles. *Beiträge zur experimentellen Psychologie*, 1889–92; *Psychology and Crime*, 1909, *Psychology and Industrial Efficiency*, 1911; *Harvard Psychological Studies*, 1903–6. The work of first importance here is the *Grundzüge der Psychologie* (1900), of which the first (and only) part is devoted to discussion of principles. The earlier work, *Die Willenshandlung* (1888), should not be forgotten.

The "action-theory" has definite historical affinities. Association tends to make mental life depend on sensation and the consequences of sense-stimulation it is therefore in a way to be called "peripheral" (cp p 174). Apperception is the name for an activity which is "central," and a doctrine of apperception logically involves emphasis on attention and inhibition as activities of the psychic life. This is, broadly, the antithesis shown in modern psychological writings. Munsterberg gives primary importance to the motor activities of the cerebral centres While the associationist regards the intensity of the sensation as equivalent mainly to the strength of the external stimulus, Münsterberg inverts the position and maintains that the strength of the sensation is equivalent to the centrifugal activity—that is to say, the work done by the cerebral centres.

Every sensation, which means here every content of consciousness, corresponds to the transition from excitation to discharge as occurring in the cerebral cortex. Since it is a fact that there is antagonism between motor centres, and that the action of one inhibits the action of another, this "act-theory" is held to be a valid explanation of attention and inhibition. For a sensory stimulus is always received under conditions which constitute a predisposition to action; consequently it finds some motor nerves already excited and others already inhibited: the unit of the conscious life is the psycho-physical state which includes sense and motion. This unit is what Münsterberg calls sensation. The task of psychology is to reduce all complex states to these elements; the quality of the sensation is determined by the spatial position of the path of discharge, and the liveliness of the sensation depends on the strength of the discharge. Following this line of thought, we reach conclusions similar to those of Ziehen, namely, that every psychic operation has a physiological counterpart, that the mechanism of the neuro-cerebral system is responsible for all happenings, and the will is simply perception of an effect produced through the body and accompanied by sensations of muscular effort.

Though Münsterberg's hypothesis has had a somewhat solitary life, it merits attention as an effort to recognize adequately the crisis occasioned by the disagreement of psychologists. To make psychology a science, Munsterberg thinks that some definite causal series must be adhered to. Such a series is not given in the mental life, for it is full of gaps and apparently causeless changes it may better be found in the sphere of physiology, in the brain processes and their accompaniments, but if we are to avoid irrelevancy and deal with those physiological events which are relevant to psychology, we must be able to name a definite point at which the physiological datum is also a psychological datum. This, we are told, is the sensory-motor process. The suggestion is attractive because such a process unifies passivity and activity, sense-receptivity and ideomotor activity, the whole afferent and efferent currents of life. Such a union could be exemplified in reflex action at the lower level, and if we are prepared to see in all "higher" processes only the multiplication and complication of one elementary process, then perhaps the sensory-motor units can be so added and multiplied, combined and complicated, that psychology will be an "exact science."

At this juncture a new phase develops. This psychology has purposely eliminated what the plain man calls "himself." If the plain man has a headache, science is not interested in his naïve assertions about his "head"; it flatly contradicts his "experience" and tells him that his headache is "really" an auto-intoxication located somewhere else. Similarly, when the plain man says his "will" was active, the scientific psychologist regards this as a statement of symptoms, an indication that the person is actually experiencing changes of muscular tone or sensations of muscular contraction, though the plain man has no more idea of these than he has of the chemical fermentations which constitute the "objective" phase of his headache. To make psychology a science honoured among sciences, Munsterberg would make it "objective" in this sense. This purpose, and the need which gave it birth, must be duly recognized; for whether this way of achieving the end is right or wrong, the need is certainly a real product of historical evolution. Throughout his works Munsterberg relies mainly on the muscular sensations as affording the required objectivity the biological view that touch is the fundamental sense, together with the emphasis on reflex movement which biology favours, doubtless point in this direction. Yet the position is of doubtful value The pressing question is simply whether this type of psychology does not become scientific in exact proportion as it ceases to be "psychology." To assert that point is to reject rather than criticize, for Münsterberg openly proposes to define psychology as "objective" those who think it must be subjective are irreconcilable opponents

When we hear that a psychology is "scientific" we expect its author to insist on the value of experiment and measurements. Munsterberg began by modifying and ended by rejecting psychic measurements. He has also expressed himself very emphatically on the danger of overestimating the value of experiment. Having cast out of psychology all that constitutes the plain man's idea of "personality," he makes room for it elsewhere. For psychology the "heroes" of history are mechanisms whose actions can be regarded as complex processes reducible to stimulations and discharges in the centres of neural excitability. But that is not the whole matter. There is also a subjective point of view. This, however, is another science, the so-called *Geisteswissenschaft*. In this way Münsterberg squares his account with the historical sciences and becomes, outside of psychology, a supporter of idealism and voluntarism. This is not so paradoxical as it is sometimes made to appear. In the development of the doctrines of method, with which Münsterberg is so largely concerned, there has come to view a problem which is not yet clearly formulated, and that problem is this very question of the relation between history and psychology.

§ 5. It is possible to regard consciousness as a function of the organism without inquiring further into the physiological details. This type of psychology is to be found in Friedrich Jodl's *Lehrbuch der Psychologie*, a work that has had considerable vogue in Germany. Its chief characteristic is the combination of many old and familiar views with the newer elements due to doctrines of evolution. The basis is the idea of an organism which by evolution has obtained a physiological structure adapted for action and reaction, consciousness being the highest point of the evolution. This basis is broad; it gives room for the consideration of heredity, and also for the idea of a gradual development within the limits of one individual life. To heredity the individual owes general dispositions and tendencies, which are frankly admitted to be organic, and therefore must in some degree give a naturalistic trend to the general exposition. The principle of heredity is the wider law of continuity, the law that every succeeding state is dependent on the antecedent and is a form of "reproduction." This continuity is a "primary memory": it appears at a higher level as "plastic memory," or the power of so retaining and assimilating earlier impressions that new forms of activity (or variations) are produced.

Consciousness is psychic reaction, which develops from the simple, homogeneous, and indefinite stage to the complex, heterogeneous, and definite. Spencer's formula is here taken over bodily, and the exposition follows accordingly. The manifestations of consciousness are classified under the heads sensation, feeling, striving: but these are not "faculties," they are forms of reaction to be regarded as always co-existent. The organism is acted upon from without (sensation), reacts against this stimulus by inner changes (feeling), and achieves new adjustments by a mediation between the inner and outer (will). As consciousness has different levels, we find its activities classified as primary and immediate, or secondary and mediate. The latter depend on the evolution of centres which subserve memory and association. There is also a tertiary stage, where consciousness is affected by the social environment and the objective mind is evolved Attention is treated according to its level: primary attention (sensorial) is passive, but secondary attention (the representative) is active, and controls the series of representations. The will is the last stage of evolution; while an element of will is found in feeling, in this stricter sense will is equivalent to the control of elementary feelings by those which arise out of reproduced or associated ideas Jodl, as against Wundt, emphasizes this view of the will. The book as a whole is a reaction from late German psychology toward Spencer.

§ 6. Among those who build neither on physiology nor biology, but rely on the experimental treatment of psychological data, the pre-eminence belongs to Ebbinghaus and Külpe.

Hermann Ebbinghaus (1850–1908, Professor in Halle and, later, Breslau) made his reputation by the publication in 1885 of his researches on memory (*Ueber das Gedächtniss*). In these researches he provided a model for this class of work. He believed that the two essential factors were repetition and time, the former tending to create and the latter to destroy the impressions. The *meaning* of what was to be remembered was eliminated, so as to remove that complicating factor · nonsense syllables were employed to secure this condition. The particular law which Ebbinghaus formulated as a result of this research is far less important than the discovery which emerged in the course of it. The experiments showed that if a series A B C D E were learned and forgotten, and then in a second experiment a series A C E was learned, there was an increased facility which implied some association between A, C, and E. As this must be due to the previous exercise, it was shown that A and C were to some extent associated, apart from the mediating B. Ebbinghaus also demonstrated that a series when learned backwards (X to A) takes less time if it is previously learned forwards (A to X). This, again, throws interesting light on the form and character of the association processes.[1]

Ebbinghaus gathered together and systematized his psychology in the unfinished *Grundzüge der Psychologie* (one vol., ed. ii., 1905; vol. ii., completed by E. Durr, 1913). This was quickly recognized as an up to date book. It impresses the reader as essentially up to date. The standard questions are all carefully oriented and fully treated; neurology and the allied topics are given adequate space; sensations occupy the place of honour; the ideas and the feelings are grouped next as "simple forms of psychic activity" or "elements." This arrangement is not an artifice; it is a theory in action. Ebbinghaus recognizes physiology as indispensable background, sensation, ideation, and feeling are the elementary data; then the remainder is a question of the operations of the soul, its life as equivalent to the processes into which those elements enter. In the first part Ebbinghaus tells us what the soul *is*, and maintains that there is no unknown residuum over and above the elements described; in the second we learn what the soul *does*. This, again, is no chance collection of statements; its basis is a definite theory which has considerable interest as one more mediation between extremes. Ebbinghaus adopts psycho-physical parallelism, and follows the psycho-physical line of development in the part that concerns elements. But he does not believe any purely descriptive psychology can be adequate; we must explain, and we can explain only if we follow a genetic and comparative method. The fourth book, on the laws of psychic life, therefore takes a turn toward the biological standpoint, and the central idea becomes that of self-maintaining action. In this case the term "biological" denotes method only. there is no attempt to import any matter that belongs to the biological sciences; the matter remains to the end strictly psychological. The forms of psychic life are considered according as we regard (1) the coexistence of simple factors, or (2) their sequence, or (3) the total product of the processes as building up new forms of action, or (4) the connexion of these processes with physical activities. The chief forms in these divisions are (1) attention, (2) association, (3) habit, attitude, fatigue, and (4) movement.

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[1] The experimental study of memory began with Ebbinghaus. "It is not too much to say that Ebbinghaus's recourse to meaningless syllables as means to the study of associative tendencies marks the most considerable advance, in this chapter of the psychological system, since the time of Aristotle" (Titchener, *A Beginner's Psychology*, p. 152). The most important sequels to this are H. K. Wolfe's study of memory for tones, *Phil. St.*, iii. 534; studies by Lehmann (ibid. v) and Scripture (ibid. vii), and the critical work of G. E. Mueller and F. Schumann, "Experimentelle Beiträge zur Untersuchung des Gedächtnisses." *Z. f. Ps. u. Ph. d. Sinn.*, vi. Cp. James, i. 678; Külpe, *Outlines*, 179, 208. Myers, *Experimental Psychology*, I xxi, xxii, with bibliography.

This description must suffice to show the chief lines on which Ebbinghaus works. Without attempting a complete survey, we may add one or two significant points which seem to us both distinctive and important.

Having accepted psycho-physical parallelism, Ebbinghaus frankly admits that it presents difficulties. Of these the one most commonly urged is the fact that very small differences in objective stimulation must be credited with great differences in result. Is the cause adequate to the effect? For example: a man receives a telegram, "Your son is elected." He is filled with joy, and proceeds to act accordingly: but another telegram arrives, "Your son is rejected," and the man is accordingly depressed; his actions are totally different. Can we suppose that so small a difference in the letters which act as visual stimuli really accounts for all the subsequent differences? Must we not assume that the interpretation, the psychic factor, is the cause of the physical outcome? Ebbinghaus replies that the difficulty is due to supposing that the neuro-cerebral processes are simple counterparts of the stimuli, that each letter or word excites one cell or group of cells. But this is not the only possible way of stating the case. A word is not an isolated entity: it has its associations, which, physically expressed, are irradiations from one cerebral centre to others along brain-paths. This is a modification of the view that there is a point-to-point relation between the objective stimulus and the neuro-cerebral centres, and it becomes an essential feature in the exposition of every type of action. It appears, for example, in the treatment of ideas (p. 560), where emphasis is thrown on the arrangement or order of excitation to explain how things which are objectively similar (words like Rebe and Eber) can produce dissimilar results Again, an application of this view is seen in the treatment of attention and memory. Attention implies concentration, which is in physiological terms contraction, or the tendency of neural excitations to converge on a limited area; while memory requires that the excitation should radiate outwards and produce excitation of centres other than that first stimulated.

Other points of interest are the fact that Ebbinghaus, with Lipps, accepts the Unconscious as explanatory principle (cp. p. 196), that Wundt's doctrine of feelings is rejected, and that association is held adequate to explain all phenomena without "apperception" The "association of ideas" is for Ebbinghaus something quite distinct from the eighteenth-century associationism rejecting the latter, he accepts the term "association" as a name for a general mode of activity which is not a relation between "ideas" at all, but a phase of the organic unity of the soul (psychophysical system). The will is not either an element or a separate type of action it is a complex of sensation, association, and movement

§7. Oswald Kulpe, Professor in Wurzburg, produced his chief work, *Grundriss der Psychologie*, in 1893 It was translated into English (1901) by Professor Titchener, and is sufficiently well known not to require description in detail. The work is predominantly experimental, and its value consists mainly in the thoroughness with which the methods and results of the "new psychology" (in this case very closely allied to Wundt's) are stated. In respect of theory, Külpe is, in this work, inclined to agree with Wundt on the cardinal doctrines of feeling, attention, and apperception, though in the question of will he sides with those who reduce it to a complex of sensations and ideas marked specifically by an "idea of the result." He defines psychology as "a science of the facts of experience in their dependency upon experiencing individuals." He admits that individual differences always meet us; but no science is deterred by that fact from formulating general statements and laws. Physiology is described as inadequate to provide an explanation of psychic processes, and is therefore to be used cautiously: experiment, observation, and introspection are of more use than physiological hypotheses The emphasis falls mainly on analysis throughout the work.

Though a disciple and follower of Wundt, Külpe has shown himself decidedly inclined to break away from the limits which cramp the work of the master. Though neither a revolution nor a reaction, the movement which began under Külpe's influence, and is now known as the doctrine of the Würzburg school, can only be regarded as a declaration of freedom inspired by dissatisfaction. For the historian this crisis, however mild, is more interesting than many textbooks, and it is excusable to ignore the details of Kulpe's *Grundriss* while we lay emphasis on the new spirit which he breathed into the bones of German psychology. As the result of this development was a new conception of method which affects the whole field of modern psychology, the subject will be met again in the later part of our history (p. 281).

§ 8. Among modern psychologists Brentano holds a curious position. The adjective most commonly applied to his work is "old-fashioned": embedded in the flowing narratives of the "new" psychology we find references to the "older type" as presented by Brentano, accompanied with cautious indications that in many points the work is important. For the historian this collision of the new and the old is a matter of exceptional interest. Let us recall the fact that Brentano wrote in 1874; that Fechner's *Psychophysik* was then fourteen years old; that Wundt had laid the foundations of his work and begun to acquire ascendancy and vogue, though the laboratory was not yet in operation. We may recall also the fact that Brentano had the bias of a Catholic theology to shape his course—a fact that shows itself indirectly in lengthy citations from Aristotle and vindications of Thomas Aquinas. It is not surprising that the outcome was a work of great literary merit, well-informed and up to date (in 1874), a bone of contention for subsequent writers and a model of keen criticism. Brentano has been called a neo-scholastic, but the emphasis must be laid on the word "scholastic." Brentano's modifications of the old in face of the new, and the new in face of the old, are so far fundamental that the work is never in danger of being regarded as a futile resurrection of dogmas.

The *Psychologie vom empirischen Standpunkte*, so far as it ever went, comprises two books, the first on psychology as science, the second on the psychic phenomena in general. The first book is concerned entirely with questions of method. Here the chief point is the insistence on experience as immediate, ultimate, and incapable of error. The source of all psychological experience is the inner perception, for without this we can never know what an idea, a judgment, a desire, a feeling, or a volition really is. Inner perception is to be distinguished from inner observation; while we can perceive outer objects and then observe them, we can never "observe" experiences of the inner perceptions. Most of the errors in psychology, Brentano thinks, have arisen from a confusion between perception and observation (in this sense); from it, too, has arisen the scepticism of those who reject psychology, as, e.g., Comte did Here, it would seem, Brentano revives the mediæval problem, Does the soul know itself? He decides that it does For while it is true that "we only know phenomena," in the case of the soul the phenomena are the acts, they are functions without any remainder in the way of material substrate. Consequently, there is no difference between the terms "soul" and "psychic phenomena." Since the soul is its acts, psychology can be defined as science of psychic phenomena or as science of the soul indifferently.

The definition of psychology as "science of the soul" can be traced back to Aristotle; but the history of thought since Aristotle shows a continual limitation of the term "soul," which now means consciousness rather than "principle of life." There has also been, at times, a tendency to make the different sciences into opposed spheres of reality, as we see in the opposition of the physical to the psychic. Brentano rejects this opposition. On the one hand, these oppositions too often lead to conflicts—e.g. the attempts of some writers (Maudsley among the chief) to reduce psychology to a form of physiology. On the other hand, if we recognize the unity of the sciences, there is room for all as specialized fields which supplement each other. Brentano's defence of introspection is not the prelude to condemnations of other methods. His final conception of method includes self-observation as based on the recall by memory of experiences; observation of the experiences of others as shown in speech, actions, and all forms of expression; study of animals and of children, of abnormal individuals, and different grades of civilization. He would give a large place to physiology, but not admit that it is the basis of psychology (Horwicz, Maudsley), and to mathematics, but not in the Herbartian way. Measurement and statistics are mathematical processes which assist the psychologist: we can measure extensive quantity, such as time-duration, but intensity cannot be measured. Brentano criticizes the Weber-Fechner doctrine in a way that has been often followed since; the two points are (a) that exact determination of psychic processes by such methods is obstructed by intermediary physiological processes; (b) that intensity is a factor which complicates all psychic processes, through attention especially, and cannot itself be either eliminated or estimated.

The second book, on psychic phenomena, deals with two points mainly—the Unconscious and the problem of classification. Brentano regards all theories of the unconscious as perversions due to influences from physiology. We may say of this that historically the notion of the unconscious did arise from the conception of reflex action and the consequent doctrine of higher and lower levels, but Brentano makes the subject too simple by reducing it to the question whether unconscious consciousness is conceivable. Such a treatment is no longer instructive in view of the later developments of the subject. On the question of classification Brentano makes his most characteristic point. Taking the Kantian division of sensation, feeling, and will, he examines each of these operations, and finds that introspection does not give any pure sensation, but always a mode of reaction to a situation. He rejects the principle that in psychology we can form ultimate classes of those elements which are not further reducible (Kant). On this basis, seeing and hearing would have to be regarded as ultimate classes in fact, there would be an infinite number of irreducibles. Brentano's own principle of classification is the mode of relation to the immanent object This gives as classes presentation, judgment, and feeling. As Brentano says (p. 264), this classification divides Kant's first group (knowing) into two, but unites Kant's second and third (feeling, willing) into one.

To understand how this classification can be justified, it is necessary, first, to understand the general position. Usually, emphasis falls on the object of the psychic process: for example, we say that we see a colour, distinguishing the act of vision from the object. But the "immanent object" is the content of the act; psychologically the colour and the seeing are one we have simply "colour-in-consciousness." By thus having it in consciousness we recognize it: which means that we affirm it—that is to say, judge it. Usually judgment is described as being "about something." We are told that the judgment "A is B" says something about A. But Brentano means that consciousness of A as A is itself judgment. We need not concern ourselves about objects (the colour seen), but only about the inner fact that a colour-presentation is given. Though we never experience presentation apart from affirmation (judgment), these are distinguishable. What Brentano aims to achieve is twofold. First, he would get away from the whole question of the individual's relation to an (external) object. Secondly, he would revive the scholastic view of *intentio*—that is to say, the act itself apart from its (outer) object but inclusive of its determination (immanent object). The differences between acts can only be established by the appeal to experience. We do (or do not) experience a difference between presentation, judgment, feeling. Those who do will agree with Brentano in any case there is no other court of appeal Some light is thrown on this subject by reading Brentano's criticism of Bain Bain had declared that belief was a primitive attitude of mind, which comes very near to saying that we have sensations and also a belief in the fact that we have them, the belief accompanying but not resulting from the sensation Brentano calls this "unfortunate," because belief implies as its ground a judgment, *so* that Bain should have gone deeper, and then he would have reached Brentano's position In his progress away from physiological and experimental psychology, Brentano comes into close contact with the sphere of logic, and his view of judgments has penetrated many systems of logic.[1] This was natural for anyone deeply versed in mediæval thought, but the experimental psychologist is inclined to regard it as reactionary.

§ 9 Twenty-one years after Wundt's first essays, four years after the laboratory was opened at Leipzig, Theodor Lipps began to publish his works From that year (1883) to the present time Lipps has remained one of the foremost writers in the philosophical world His first work, *Grundtatsachen des Seelenlebens*, was a comprehensive survey of the field of psychology, inspired by wide reading of British as well as German authors Numerous works since then have served to mark the growth of this writer's views, and something not unlike a school of thought has grown up about this central figure The *Leitfaden der Psychologie*, in its third edition (1909) may be taken to represent the developed form of Lipps's psychology other works concerned with logic and æsthetics cannot be considered here

Born in 1851, Lipps belongs to a generation that was influenced but no longer dominated by Herbart In the perspective of time Kant was seen in his correct relations; Hegel had already been reduced to his right proportions; a sane and critical idealism was the natural tone of the period Such an idealism, when not primarily concerned to expound its ultimate metaphysic, can appropriate much that belongs to the realist, and, in fact, the system of Lotze had shown that an ideal realism is not an impossible conception. For psychology this might prove the most useful attitude to adopt. In relation to the idea of the subject, it supports the assertion that consciousness is an independent sphere and that psychology is the science of experience as we know it immediately. In relation to the object, it allows its adherents to assert that the object of knowledge is not a mere projected image but an indispensable datum, not a product but a presupposition of experience. This was the view adopted by Lipps, and it may be described as Kantian in spirit, in some aspects Herbartian, and at the same time influenced by the teaching of Wundt The foundations of this kind of psychology are the two propositions that the inner life of consciousness can only be dealt with immediately, and that activity is the mark of all conscious processes

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[1] See p. 271.

The former proposition defines the relation of this psychology to physiology and to physiological psychology. As a principle of explanation physiology is rejected; so far as concerns all attempts to deduce conscious processes from cerebral or neural activity, or to localize mental functions, physiological psychology is a nonentity Self-observation is the one and only method This is not to be taken as a rejection of all experiment; on the contrary, both outer and inner experiments, experiments on the correlation of stimulus and sensation as well as on the processes of association, memory, and reaction-time, should be employed. These are subsidiary aids, means of arriving at answers to questions; if we want numerical and statistical results, we may obtain them in this way But much remains beyond the reach of any laboratory experiment; and even where this method assists us, we can never forget that the data must end in a psychological truth, so that "one can be an experimental psychologist only so far as one is already a psychologist."

In this type of psychology all the emphasis falls on the experience as an immediately known activity. Consequently the objective event called sensation is barely within its limits. Sensation as a psycho-physical process only interests the psychologist in respect of its meaning; otherwise it is a mere *x*. The process and the soul which lives through the processes are equally unknown; with a decided swerve toward Hume, Professor Lipps postulates the reality of the soul and its processes, but takes as the limit of recognizable processes the presentation. The sphere of psychology begins at the point where this recognitive experience emerges The presentation presupposes a real process on a lower level, which is its determinant, to present is to present something; to be aware is to be aware of something; that something cannot be any external thing or event—it must be the earlier determination of the soul This determination remains as a "trace," the elementary "memory-trace." Such "traces" constitute memory and are implied in "association"

The psychic processes can only be explained by assuming that they involve from the first a certain condition of the psychic substratum, the (postulated) soul. Hence the lowest limit is of the nature of a reaction, the reaction leaves a trace, the collective product of traces is the "habit" of the soul Here, then, we have innate dispositions, constructive activities, and certain progressive states of soul called "acquired dispositions" The terms (*Spur*, *Anlage*) recall the language of Beneke, but the nature of these fundamental concepts seems strangely like that of the Arabian Aristotelians, who distinguished the primary intelligence from the *intellectus adeptus*!

The exposition of the psychology thus defined begins with "elements" and elementary laws. Sensations are classified as usual, attention is described as a heightened activity; and here we come to a crucial point—the Laws of Power Psychic Power is a term here used for psychic life viewed as activity. If, for example, a person directs his attention to a colour, what is the total process? Simply the seeing of the colour. In other words, attention is not an activity capable of being added to or subtracted from the sum of activities upon which psychic power is expended. We must rather think of this power as a permanent force, sometimes distributed, sometimes concentrated. When the force is concentrated we are said to attend; for then the major part of the force is drained off into one channel. As the force ceases to operate in other directions the number of the objects presented is reduced.

Special notice has been drawn to this point for several reasons. In the first place it shows how Lipps throws his psychology into the scheme of a science which deals with force rather than matter The materialism of 1860 was over and a new era had dawned The study of energy succeeded the apotheosis of matter, and energy has the advantage of being a neutral category. If the opponent claims that conservation of energy is a law which prevents anyone from saying that brain-movements pass over into thoughts, the psychologist may retort that the law should include psychic energy and conserve that along with the rest Herbart's position could then be re-edited as a doctrine of forces tending to equilibrium, which is, in the end, exactly what this author does Consciousness is equivalent to a certain "height" attained by a process, below that level the process exists as an unconscious sensation or idea This, we are told, must not be read as though there could be an unconscious consciousness, what is unconscious is the process. The relation between the process and the consciousness is analogous to the relation between heat and light; if the vibrations of the luminiferous ether increase in rapidity, radiant heat passes into light We cannot say the heat causes the light, nor must we say that the process causes the consciousness Some would say that the unconscious process is really the physiological brain-state, but that, too, our psychologist rejects because it leads to the unprovable thesis that mental states are caused by brain-states Finally, the unconscious is declared to be a concept, justified by the help which it gives in explaining the gaps in the causal connection of psychic events The concept of the unconscious must be regulated by two principles; the term applies only to what has appeared or will appear as conscious, and that which is unconscious acts as a persistent factor in the totality of the psychic life through qualitative differences due to its operation.

Energy is subject to different kinds of condition. Quantitative conditions are one kind, and may be in the form of intensity (the thunderclap), or mass (the mountain range), or significance (portent). These are describable in terms of energy because they condition the "concurrence" of forces; the psychic activity is prevented from distributing itself and brought to a focus. Another kind of condition is that of the negative and positive "value-energy," the pain and pleasure of experiences. Frequency, the basis of familiarity and of habit, is another type. Infrequency or strangeness may attract attention also, these being the positive and negative types of "dispositional energy." Fourthly, there is a "contrast-energy," a directing of force which depends on the diverting of a concentrated energy from its usual course The idea underlying this description is that of a unitary force which has both quantitative and qualitative attributes, direction is plainly here only a matter of quality, for a new direction is equivalent to a change of character The facts observed are not unusual; that "what is new is also interesting" was discovered long ago. Does the statement really gain anything by this translation into terms of energy?

Granted the general theory of "psychic force," attention, memory, association, and dissociation can easily be stated in terms of concurrent and divergent lines of energy. We pass over the detail of that statement in order to explain the higher processes

Lipps bases his analysis on a distinction between the soul in its relation to things and the consciousness in its relation to the processes involved in that relation. The lower level is constituted by that relation, it is the sphere in which events merely happen, a sensation, e g, simply occurs The higher level is that at which the processes which occur on the lower level are the content of consciousness. The two levels are therefore describable as (at least relatively) passive and active, respectively. Sensation is passive, imagination is active. Conation is analogous to sensation, being the point from which activity proper begins. The point common to sensation and conation is their position outside of the organizing activity which is called apperception. Historically, this theory must be regarded as another phase of the "inner sense" doctrine, a restatement of Leibniz's apperception, Kant's synthesis of the matter of thought with the "I think," and Herbart's doctrine of apperception. However little its author might admit it, the guiding principle of this analysis is the idea of incoming and outgoing currents. Both are within the life of the soul, but this assertion does not rob the antithesis of its significance; perception is self-directing, apperception involves gripping the contents and redirecting them by means of the inner mental force. A complex system of distinctions is then required to bring this theory to completion. The individual may be determined to action or determine the self to act, the contents of the mind may acquire relations or relations may be imposed upon them, the receptive attitude may give place to the questioning attitude (the source of judgments), and so on. The subject of apperception is treated elaborately by Lipps, but in principle it amounts to a description of the ways in which the contents of consciousness can be manipulated by reflective thinking Thus, the contents arrange themselves at the lower level by processes of dissociation and assimulation, at the higher apperceptive level the grouping of the contents is regulated from within, and we get the phenomena of discrimination, serial order, analysis, and abstraction—i e the elimination of a factor in a complex whole by purposive selection

Next to apperception, the most characteristic term in this psychology is *Einfuhlung* Knowledge may be of things (sensation), of the self (apperception), and of other selves This last source of knowledge is *Einfuhlung*, or self-objectification This doctrine of *Einfuhlung* is most useful in the explanation of æsthetic and ethical modes of consciousness, but it plays an important part in the general theory of objective thinking. Every object of thought has qualities which depend on this transfusion of the self into the given. A line, for example, is not only *seen*, but also *felt* to be straight or curved; the vertical line appeals to us as upstanding, it suggests an act of rising up, it seems to call on us to follow the path it indicates. In this way all that we denote usually as bare qualities of things are really the overflow of our own activities into the outer world, and as we live in them so they become living realities for us.

The doctrine of *Einfühlung* is clearly in its essence a form of animistic thinking. We might regard animism as its first unreflective form, and therefore it may be said to derive support from the study of the primitive mind It serves Lipps as a basis for the explanation of language. The word is not something created by the mind and then associated with the object On the contrary, the name and the thing are two phases of the original unitary experience, the proposition is the more complex system of words which has reality in so far as the total experience is revived by it; and, finally, the communication of thought is the still more complex condition in which the objectification involves other persons, and a further inclusion of their minds as objects of *Einfühlung* In this way we arrive at an explanation of those states of consciousness which combine in their unity things, selves, and other selves[1]

§ 10 The name of Eduard von Hartmann (1842–1906) is usually linked with that of Schopenhauer, though Hartmann regarded himself as having neither master nor disciples. The only work by Hartmann which is directly and exclusively concerned with psychology is *Die Moderne Psychologie* (1901), a review and criticism of the chief psychological writings of the nineteenth century This is a work full of erudition and very instructive It is like most of Hartmann's writings in being frankly personal, and undisguisedly written to show how much psychology has lost by not using the author's doctrine of the Unconscious. For Hartmann the Unconscious is the fundamental active principle in the universe. It is not identified, as by Schopenhauer, with the nature of will, but is a synthesis of will and intellect, a creative force in which resides the principles of construction, and on which, therefore, depends the meaning of all creation.

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[1] The significance of this doctrine for aesthetics will be obvious in that direction Lipps has received full recognition, but the topic cannot be pursued here Reference should be made also to the analysis of feelings given by Lipps. This is based on the view that feeling is "subjective," while knowledge is "objective". but "objective" here means referred to objects and all such reference is said to be accompanied by feeling in the end, therefore, this mode of classifying feelings is simply a statement of the kinds of pleasure-pain which attend any or all mental activities.

In this way Hartmann makes teleology fundamental, a point which makes easy the statement that instinct is action that embodies a purpose, though without knowledge of the purpose. Into the metaphysics of the Unconscious it is not our present business to inquire, but there are certain respects in which this point of view is vital to psychology, and later developments will be made more intelligible by a statement of the essential details

Though to some of his contemporaries Hartmann appeared to be wholly original, two-thirds of the doctrine of the Unconscious was already almost a commonplace Confronted with a bitter opposition, Hartmann was shrewd enough to realize the advantage this gave him He points out that there are three kinds of "unconscious" reality. First, there are the physiological processes, which the doctrine of reflex action among others had made important Then, second, there are the psychic processes which do not come into the focus of consciousness, and these, too, were more than ever recognized Lastly, in distinction from this second or "relative unconscious," there is the absolute unconscious Hartmann argued very effectively that the first and second were widely acknowledged, that so far many people were actually incomplete followers of his doctrine He argued also that science favoured the first two meanings of the Unconscious, and that by accepting the third philosophy and science would be forever united The immediate response was very small, but as time progressed Hartmann was not only read by the general public which supported him at first, but also granted a hearing by more competent audiences. In the present state of affairs no one is anxious either to reassert Hartmann's doctrine or to deny that he powerfully influenced the development of nineteenth-century thought. Whatever Hartmann said always came back to the one and only essential conclusion—the Unconscious must be accepted. And it has been accepted. Some writers almost apologize for using the term "rational." The old habit of putting "clear ideas" in the foreground is almost obsolete. We are told that men live by impulses; that actions express the efforts of a vital energy which moves darkly on the wings of heredity through the generations of men; that we do not act from conscious reasons, but rather construct reasons to explain what has been done in and through us. The soberest psychology of the twentieth century is leavened by these ideas. In the analysis of conduct, normal or abnormal, the idea that consciousness does not really act, but rather serves to recognize and appropriate the actions of an unconscious force, is everywhere to be met. It is true that Aristotle said, "the understanding moves nothing," and Hume repeated the idea in the statement that "the reason doth not move to action," but it was Hartmann who elevated these phrases to the dignity of a cosmic interpretation, and, by sheer force of wide application and manifold repetition, made them subtly penetrate or openly dominate the minds of men. We cannot deny that Hartmann was right in his antagonism to "professorlings" Both Schopenhauer and Hartmann were anathema to the typical lecturer, and both have come to be regarded as in some way expressing a phase of experience which is better known to the heart than to the head. If we feel that the truth has been guessed rather than expounded, if we grope blindly for something tangible to formulate and tabulate, but only end with a conviction that eludes the categories, this is perhaps the natural outcome in a sphere which is implicitly devoid of logic The same is true of Nietzsche, who also belongs to this group He, too, has been proclaimed as one of the great psychologists, and much that he has said is a real contribution to the analysis of the human mind It is at present one of the most significant paradoxes of psychology that every attempt to define it recoils from the impact of some historical antithesis. Descartes and Pascal, Hegel and Herbart, Hartmann and Wundt —what phrase that has any but the vaguest connotation can spread itself over all these claimants?

BRITISH PSYCHOLOGY IN THE NINETEENTH CENTURY

§ 1 DURING the first half of the nineteenth century the focus of interest was in Germany We have followed the course of thought in that country, and it is now time to go back and see what movements were taking place in other countries. In all of them the same general characteristic prevails. The remnants of the eighteenth-century theories are swept away, a period of transition follows, and then comes the demand for experimental methods and a complete reconstruction

In England there was no great convulsion that formed a landmark in the advance. The English temper had been consistently practical, and could become experimental without pain The change that came over Germany was mediated by the adoption of English methods and theories, Herbart and Beneke both proclaiming from their respective housetops their indebtedness to Great Britain The French philosophy had long been in close touch with the British, and might have exhibited the same evenness of development if there had not occurred a temporary aberration, partly political, in the direction of an official idealism Leaving France for later consideration, we shall now trace the development of English thought and show how it began a new movement, which was in part due to the scientific progress made in Germany, and reached a second distinct stage through the further introduction of German ideas.

James Mill's *Analysis* was a work that belonged distinctly to the old school. It summed up the work of the British psychologists of the eighteenth century, but its last editors (J. S. Mill, Bain, and others) took care to signify their disagreement not only with particular details, but with the whole treatment of the mind. Their fundamental protest against the imputation of "passivity" is only saved from being a rejection of James Mill's whole work by being diplomatically adapted to the neutral and colourless parts of the work The new note in the school was activity, combined with an extension of the physiological groundwork that is strikingly in contrast with Mill's perfunctory notes on the sense-organs This novelty was a reflection of the German physiology, especially Muller's, and we have now to see how this movement was received in England

From 1860 to 1900 the course of British psychology was determined by three distinct agencies. First comes the new psychology of Alexander Bain, then the evolutionary standpoint was developed in Darwin and Spencer, making it necessary for Bain to revise his doctrines; finally, the position taken by James Ward in his article contributed to the *Encyclopædia Britannica* and in other published essays led to a second crisis. Bain's last defence of the doctrine that had grown old with him is to be read in the numbers of *Mind* for the years 1886-7 Bain was a strong debater he knew all the advantages and most of the limitations of his subject; if we cannot feel to the end that the doctrine is sound, we feel at least that a great cause has been greatly maintained

It was in 1886 that Bain reviewed in *Mind* the article by Ward in the next number he wrote a general defence of Associationism With that he nailed his flag to the mast, he may or may not have realized that the ship was sinking To understand this climax it is necessary to go back to the year 1836 In that year Bain entered Marischal College in the University of Aberdeen He was then eighteen years of age, a child of poverty, delicate in health, wonderfully zealous in the acquisition of knowledge. Mathematics, chemistry, natural philosophy, moral philosophy—all these entered into his scheme of studies. Science and philosophy were for Bain inseparable the philosophy (chiefly Reid) had no inherent quarrel with the science, being itself a "mental science," which asked only for peace and the right of self-preservation. Restraint and caution could be acquired in abundance from the philosophical regimen of 1840; some other nourishment was needed to satisfy youth and stimulate progress; it was provided in due course by the physiological work of the Berlin school. Before 1855 Bain had shaped his philosophy of the mind. Empiricism was the fundamental characteristic; induction was the logical principle; the study of the body was to precede that of the mind, and the accumulation of physiological data was to be the beginning of wisdom.

Thus in Bain we see the last pure example of the spirit that had animated the earlier British writers, equally laudable and equally infelicitous. Locke and Hume suffered from excessive respect for Newton and gravitation, Hartley seemed to think that the secret of the Universe could be solved in terms of sound, James Mill coquetted with chemistry; Bain, more fortunate in his choice, united the "mental philosophy" to the natural philosophy of the body Whether or not this choice was simply a piece of good fortune we need not inquire it is enough to know that Bain looked to sciences that were not "mental" for guidance in those that were, that he took physiology as his ally, and so entered the field with a physiological psychology that was well abreast of new movements, and could hold its own for half a century If it now seems antiquated we must remember two significant facts First, that when Bain took up the study of psychology nobody had realized what could be achieved by taking the whole organism as a basis, second, that Bain helped a whole generation of writers to think out the philosophy of the organism and see not only what they could do with it, but also what it could not do for them The elaborate physiology of Bain's works was absent from James Mill's *Analysis*; in Ward's scheme it has again shrunk to minor importance.

There is a well-known passage in which Bain says that mind and body are one, a double-faced unity · "We are to deal with this, in the language of the Athanasian Creed, not confounding the persons nor dividing the substance." "The momentary glimpse of Aristotle," he says in conclusion, "is at last converted into a clear and steady vision." We might not unfairly describe Bain as a true Aristotelian, not only because he did more than anyone else at that time to secure a just recognition of Aristotle's psychology, but also because of his own grasp of the ideas of organism and activity. Yet at the last this judgment would require modification; for the Scotch philosopher thought about matter and mind in the spirit of Descartes rather than of Aristotle.

The nature of Bain's chief works makes a satisfactory reproduction of their teachings almost impossible. The central points are few, simple, and not original but the real worth of the expositions, as landmarks in the history of psychological literature, consists in their massiveness and their untiring elucidation of general principles by quotation and by observable instances This was at the time a very necessary procedure, but the inevitable result was the production of the feeling which was tersely expressed by Höffding when he said that Bain wrote psychology in the spirit and manner of a botanist This is true in so far as Bain purposely adopted the method of natural science as he understood it He dispensed entirely with any preliminary assumption either of a soul or a sensorium, or unifying agency, he preferred to deal solely in nerve-currents, "it seems as if we might say, no currents, no mind" (*Senses and Intellect*, 1868, p 53); the repetition of those currents and their association, in all degrees of complexity, are for Bain the real explanation of mental processes For taking the nerves and the brain as an organic unity, Bain evolves from them the elementary states of mind—viz instinctive muscular movements and the processes of the special senses Motion, sensation, and instinct together form the basis of the developed life of conscious beings, for consciousness is a unity in which may be distinguished as typical forms, feeling, willing, and thinking. The first phase of cognition is the act of discriminating, with which stand closely connected the consciousness of agreement and the power of retention. The two latter are forms of association, and in explaining them Bain restates with remarkable fullness and completeness the whole doctrine of Associationism.

While in general this is the familiar method of the British school already made classic by James Mill, the part assigned to movement is a distinctive feature of Bain's exposition. Movement and perception are throughout closely allied, and from this basis it is possible to develop a sound doctrine of feeling and will Though apparently arriving at this position easily by employing the contemporary progress in physiology (which had already done much to elucidate reflex action and other primary forms of spontaneous movement), Bain actually transgressed his own limits as he advanced The spontaneity which ultimately looms in the background is not wholly explained by the physiological surplus of energy which Bain uses as its equivalent. To his contemporaries this spontaneity appeared no less than a surreptitious appropriation of that activity which was looked upon as the particular property of transcendentalism. To a later generation Bain seemed to stand midway between a mechanical or physiological theory of the mind and such venturesome speculations as those of Maine de Biran or Schopenhauer He had, in fact, opened the way to that new type of thinking which makes activity its supreme category, and explains all thought and feeling by making the one an instrument of purpose, and the other a consciousness of complemented or obstructed instincts. We can make no attempt here to reproduce Bain's elaborate exposition of detail It will be necessary to confine our remarks to the general significance of his attitude This can best be done by shewing how Bain was regarded by three great contemporaries—J S Mill, Spencer, and Martineau

§ 2 The remark made by J S Mill at the beginning of his essay on "Bain's Psychology"[1] is too well known to be omitted here. "The sceptre of Psychology," he said, "has decidedly returned to this island" For two generations the study of the mind had been either neglected or carried on perversely; Bain restored it to its ancient honour. Mr. Mill was prepared to take Mr Spencer seriously, but "though possessing great analytic power he is a less sober thinker than Mr. Bain." Mr. Spencer,[2] on the other hand, did not feel this lack of sobriety to be any drawback, he was impressed by Mr Bain's excess of sobriety, and also by Mr. Mill's habit of understanding things without the help of evolution According to Spencer the work of Mr. Alexander Bain "is not in itself a system of mental philosophy, properly so-called, but a classified collection of materials for such a system" It was, in fact, what it professed to be, "a natural history of the mind," and Mr. Bain is not unlike the naturalist who "collects and dissects and describes species", his work is of great value, "estimated as a means to higher results." "To those who hereafter give to this branch of psychology a thoroughly scientific organization, Mr Bain's book will be indispensable"

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[1] *Dissertations and Discussions*, iii. (1867).

[2] H. Spencer, *Essays*.

It is impossible to ignore the tone of patronage in this estimate, for Spencer Bain is purely a factor in a greater transition to a new era, a humble and unconscious co-operator in greater movements of thought In this there is very much truth, it is now a commonplace to say that J. S. Mill never properly appreciated the significance of Darwin and the year 1859, so that we can to-day see how accurately Mill understood Bain's relation to the past, while Spencer was better able to estimate the future significance of the early works Neither writer at the time could foresee the course of the next forty years, and for that reason what they thought in 1863 has only a partial relation to either Bain or his works as known in 1903 Without being final verdicts, these estimates have their own intrinsic value as historical landmarks; and with that excuse another figure will here be introduced

While Mill was writing in the *Edinburgh Quarterly*, the *National Review* depended for its philosophy largely on the Rev James Martineau. Unlike either Mill or Spencer, Martineau was regarded as a champion of religion, particularly of those parts which are called "the essentials"; he was indeed suspected of having renounced all the other parts However that may be, this trio makes an interesting group of witnesses In 1860 Martineau wrote an article on "Cerebral Psychology: Bain." It breathes a spirit of tolerant compassion, highly characteristic of the constituency represented by Martineau. He was, of course, "very much in sympathy" with the work as science; in some respects, indeed, Mr. Bain's position deserves nothing but admiration; yet one must protest. The physiologist, treading hard on the heels of the mental philosopher, already claims almost the whole field; psychology is fast sinking to the level of the sciences; there is a "captivating simplicity" in this idea of a rising pyramid of sciences, whose apex would be the highest animal, Man. "It seems to promise that we shall surmount all our ignorance, and find Thought and Love, as well as Force and Matter, beneath our feet." That is, however, a crisis not really to be dreaded, to those who say that natural science can be prolonged until the same line of method runs through mental and moral science, Martineau has one final answer "We utterly disbelieve it, and venture to affirm that no refinement of growth in the other sciences has any tendency to blossom in knowledge of the mind"

This oracle speaks more darkly than the others; its inspiration is larger, and not easily compressed into definitions, it announces, for example, that "mental science is self-knowledge," with no apparent sense of the degree to which this illumination fails even to make the darkness visible. In this Martineau was truly representative of a certain type of culture, not unknown at any time He was a champion of a peculiar form of idealism, derived originally from German sources, he spoke authoritatively out of the depths of his own sincerity, bearing his part in the cloud of witnesses to truths no longer of any interest, and quite unconscious of the way in which he performed synchronously the function both of witness and of cloud Whatever else may be said against Bain's psychology, it cannot be accused of failing to survive Martineau's Yet for all that the balances are struck very evenly J S Mill felt that what he called the *a priori* and *a posteriori* schools of thought were well matched; perhaps both were as much wrong as right. Martineau knew his strength; when he struck he wounded. He praises Bain's physiology and thinks it would make an interesting treatise by itself, in the psychology it is largely irrelevant; the apparent advance on the earlier writers, Hartley and James Mill, is illusory, consisting in nothing but a new way of talking about "activity," which ultimately is only the muscular sense of Dr. Thomas Brown; the basis of the whole work is an "idealism," which makes everything subjective and then undertakes, "given the rudiments of any brute, to construct the perfection of any angel"—by Associationism. Two points made by Martineau are of importance. The first is the declaration that Dissociation precedes Association; the second is the generalization of this principle in the assertion that consciousness is the given unity which the psychologist analyses: the Associationist is too fond of compounding fictitious elements.

This essay is of distinct interest as showing how a futile antipathy to "cerebral psychology" and a still more futile belief in "mental science" could be united with criticisms in the main justified. If we now return to Mill's estimate of Bain we shall see first how a trained Associationist valued the work of Bain, we can rely on getting a clear statement of the important points, and reconsider the grievances of the *a priori* philosophers.

The aim of the Associationist cannot be objectionable to any one, says Mill. The desire to analyse and resolve the higher into the lower is universal, it is open to the *a priori* philosopher to show when it cannot be done. Incidentally, Mill here gives the opponent the inferior ground by asking him to prove a negative; it is, in fact, the ground which the transcendentalist usually clamours for, so he cannot rightly protest. "The first question in analytical psychology," Mill continues, "ought to be how much of the furniture of the mind will experience and association account for?" The residuum is to be left for further consideration. After some general remarks on the excellence of Associationism, Mill commends the physiology of Bain, and comes to "the first capital improvement" made by Bain. "Those who have studied the writings of the Association Psychologists must often have been unfavourably impressed by the almost total absence, in their analytical expositions, of the recognition of any active element, or spontaneity, in the mind itself." This is what Bain has remedied; he has supplied the activity: he has done for Hartley's system what Laromiguère did for Condillac's. "He holds that the brain does not act solely in obedience to impulses, but is also a self-acting instrument; that the nervous influence which, being conveyed through the motory nerves, excites the muscles into action, is generated automatically in the brain itself." There is, therefore, according to Bain, an inner activity, producing spontaneous activities, from which the mental powers select those which are to be repeated or prolonged; this is the ultimate basis of voluntary action.

Thus far Mill. On this important point Martineau has very different ideas. He remarks that the sensational psychologists have struggled long with the problem "of extracting from a primitive passivity the various forms of energy." Physiology has at last decided the point, Sir Charles Bell has separated the nerves of sensation from the nerves of action, so Mr Bain follows the same course and divides the functions of action and sensation. This is technically a great improvement, Bain creates "a fund of spontaneity to set off against the stores of sensation, and make acquaintance with them." This looks like a dualism, but is not. "Though Mr Bain grants us a spontaneity, he plants it where we have nothing to do with it, any more than if our limbs were spasmodically stirred by a galvanic touch. In his zeal to cancel Hartley's prefix of a sensational stimulus, he forgets to leave any attendant consciousness at the fountain head at all, and makes the movement come, *psychologically*, out of nothing."

Martineau is not always clear in his thought, but he seems to have the criticism of the *a priori* school focused on the right point. One of the questions most in need of elucidation in 1860 was that of action, Bain seems to have thought that a physiological formula was enough, and his admirers were evidently confused between the functions of the brain and the spontaneity of the mind. Bain, in short, was temporarily overweighted by the current physiological doctrines.

Returning to Mill we hear further that Bain lays great stress on the muscular sense, but goes too far in making it the principal source of the acquired perception of sight. Association by contiguity has been so well developed (by James Mill) that nothing more is to be said; but Bain rightly insists on association by resemblance as even more important, while he adds " Compound Association " as a third law, " where several threads or a plurality of links or bonds of connexion concur in reviving some previous thought or mental state." Here Bain succeeds in explaining " the singling out of one among many trains " ; he explains also " obstructive association "

From the " senses and the intellect," Mill goes on to consider " the emotions and the will " Here he agrees with the critics that Bain is not very successful ; " the attempts of the Association psychologists to resolve the emotions by association has been, on the whole, the least successful part of their efforts " Mill rightly says that the failure is due to the fact that instead of explaining an emotion, this school is satisfied to show how an emotion becomes associated with an idea. He comments on Fear, and declares " the proper office of the law of association in connexion with it is to account for the transfer of the passion to objects which do not naturally excite it " The emotion itself, he thinks, can only be explained by physiologists ; a much more doubtful proposition Bain's treatment of the Will is praised in a way that was at the time justified ; for Mill is more interested in the general questions of freedom and determinism than in the more minute analysis of volitions. Lastly, we may mention that Mill frankly admits the feebleness of his father's explanation of Belief as due to " indissoluble associations " ; he applauds Bain's declaration that the difficulties are due to regarding Belief " too exclusively as an intellectual phenomenon and disregarding the existence in it of an active element " Bain himself, however, drifted somewhat helplessly toward a doctrine of innate credulity, the mental counterpart of his innate spontaneity . " The inborn energy of the brain gives faith, and experience scepticism." Belief is, in fact, a primitive manifestation derived from the natural activity of the system. Mill very naturally " desiderates a more complete analysis." The more hostile Martineau saw his opportunity in Bain's second volume, and quoted with asperity the passage referring to the " " eminently glandular " nature of " the tender affections ! " British psychology stood now more definitely than ever at the point where objective and subjective psychology part company.

We have already referred to the fact that Bain lived till 1903, and was active almost to the last. In 1876 he founded the periodical *Mind* for the express purpose of encouraging the study of psychology. Assisted by George Croom Robertson, the first editor, Bain made his periodical a real force during the last twenty-five years of his life. Its pages were open to all schools of thought, and contain, in addition to contributions from British writers, many articles by continental psychologists. The progress and results of experimental psychology were frequently reported at a time when that kind of work was not regarded with much enthusiasm. Bain himself was always ready to profit by new movements, though not quick to change the ideas acquired in his younger days. His second work, *The Emotions and the Will*, was published in 1859, four years after the book on *The Senses and the Intellect*, and the critics noted that it reflected its author's readiness to go further than before in the way of emphasizing activity and development. For Bain psychology was a living practical interest. His *Logic*, his *English Grammar*, his ethics, and his metaphysics were suffused with the colour of his psychology. Though he did not declare psychology to be the one foundation of philosophy, in practice he gave it that position. His idea of its value for education was expressed in a separate work, and his brief but clear statement of the relation between body and mind enjoyed a long enduring reputation. Lastly, we may mention Bain's contributions to the history of psychology. The sketch appended to the "Body and Mind" shows sound knowledge, though its scope is inadequate; the account of Aristotle's psychology, which is an appendix to *The Senses and the Intellect*, was actually the work of George Grote, and belongs to Bain only indirectly. In the literary history of psychology Bain deserves a place of honour. But he lived through an age of ferment, and was moulded by forces that he comprehended only in part. He will reappear in our history after the movements of the last quarter of the century have changed the scene.

§ 3 Herbert Spencer produced his *Principles of Psychology* in 1855, the year in which Bain published his first book. While the majority of the best-known writers of this period were Scotch, Spencer was an Englishman, sharing this peculiarity with Darwin. In his childhood he was encouraged by an intelligent father to take an interest in plants and animals, he avoided the education offered by Universities, but was taught mathematics and mechanics well enough to become an engineer In 1839 he began to be interested in wider spheres of thought through reading Lyell's *Principles of Geology* A further period of engineering was terminated in 1846, after which the versatile young man became sub-editor of a paper, the *Economist* The career of the philosopher began from this point; the publication of *Social Statics* in 1850, and the beginning of an acquaintance with Huxley, Lewes, J S Mill, and others were the first beginnings of those philosophical studies and friendships which lasted till 1903 The composition of the *Principles of Psychology* really began in 1853, with the exposition of *The Universal Postulate*, afterwards included in that work, the editions of the whole work appeared in 1855 and 1876

The year 1860 marked another crisis in the history of European thought This was the year in which Spencer opened a subscription list for the production of a "synthetic philosophy" Five volumes out of the proposed ten were ready before 1874, and this instalment included the *Principles of Biology* and the *Principles of Psychology*, the remaining volumes were to include the *Principles of Sociology*

Spencer's choice of a title for his work was fortunate, his importance lay primarily in his outlook, and that outlook was above all things "synthetic" Before Darwin published his *Origin of Species*, Spencer had taken hold of the idea of development The idea was by no means new; it could be found fully active in the earliest Greek philosophy, it had taken a mystical form in the school of Plotinus, the Arabians suspected its significance; it had emerged again in full force among the German writers of the first quarter of the nineteenth century, and attained a comprehensive expression with some attempt at detail in the work of Goethe. But it continued to lack both detailed proof and universal application. Spencer undertook the latter; Darwin supplied the former.

For the achievement of his task Spencer required an infinite mass of data. His friends thought that the time for such an undertaking had not arrived, it was, perhaps, already past. The rapid increase of material even then proved too great for the powers of a single individual, the human encyclopædia is a phenomenon of the Middle Ages, which can be reproduced to-day only by such "superorganic" bodies as learned societies or syndicates. In details Spencer is often inaccurate, the conception and the method were his more enduring contributions to the history of thought. The idea of an Absolute came to him from Kant, through Hamilton, his appreciation of the empirical and practical aspect of knowledge must have owed much to his long apprenticeship to engineering, perhaps also to the training which his father gave him, as a child, in the observation of plants and animals The combination of these two views was the object which Spencer set before himself, the goal to which he moved steadily through long years of financial troubles, physical weakness, and unrecognized labour He began with *First Principles*, proceeded to trace the origin of forms out of primitive formless matter, and so arrived at the sphere of organic structures and life. The guiding principle of the treatment is the idea of a continual adjustment between the different parts of the universe This idea, at the point which touches psychology, is expressed in the definition of life as "the continuous adjustment of internal relations to external relations" Biology is the science of life in general, the science of conscious life or psychology treats in the same way the processes through which the conscious organism maintains itself in relation to its environment

In the classification of the sciences psychology appears as a division of biology, coming between and mediating the transition from biology to sociology. This was in itself an important contribution to the idea of the psychological sciences. By relating conscious life so closely to the general idea of the organism, Spencer produced a change in the attitude toward psychology; he made clearer the sense in which psychology is a *natural* science. The movement aroused great opposition from the advocates of the supernatural quality of the soul, but this was a passing phase that belongs only to the history of culture In its general significance Spencer's point of view has become universal, though objections of another kind, based on a different conception of psychology, will have to be considered later.

Spencer inherited the achievements of the departmental sciences as they were formulated in the second quarter of the century. Among these was the idea of conservation of energy, which Spencer at first adopted unreservedly At this stage he was a supporter of the "interaction" hypothesis; it was possible for mechanical movement to be converted into heat, heat into light, and therefore ultimately for the physical to be converted into the psychic process This position Spencer afterwards deserted, adopting in its place the "two-aspects" theory Similarly, his original position required a definite exposition of the way in which the inorganic evolved directly into the organic; this also was not forthcoming. The opponent, therefore, had more than one weak point in the system to attack. But in spite of these failures to carry through the ultimate principles of the system, Spencer's scheme remained valuable and stimulating. It is not as a final metaphysic that Spencer's philosophy is to be judged, its affinity with the evolutionism of Schelling is limited to its cosmic character, but, unlike that Panlogism, the synthetic philosophy is predominantly inductive and still holds its own as a suggestive, if not wholly true, co-ordination of facts.

One of the permanent results of Spencer's work is the growing tendency to separate objective from subjective psychology. Before 1870 physiology and psychology had begun to overlap, and some had maintained that physiology was the real science of mind, while others held that psychology was equally a true science. Psycho-physiology was thus in a very indeterminate position; a science of behaviour was somewhere latent in these complicated ideas of mind and body. Some popular works, still current, belong to this stage of development. W. B. Carpenter, a physiologist and Registrar of the University of London, attached to his *Principles of Human Physiology* (1852) an outline of psychology, which became later a separate and lengthy book called *Principles of Mental Physiology* (1874) Beneath the mass of facts and stories which occupies most of this work there lies a purpose to exhibit the power and reality of the human will, a purpose that was inspired by Martineau. Put forward as "a contribution to that science of Human Nature which has yet to be built up in a much broader basis than any philosopher has hitherto taken as its foundation," the work had merits and deserved its popularity.

To this epoch also belonged a group of men who, without definitely working as psychologists, were active agents in the progress of thought Sir Benjamin Brodie deserves to be remembered, also Sir Henry Holland, and T. Laycock (*Mind and Brain*, 1860) Curious notions were produced as the offspring of a new and premature alliance between the science of mind and the science of body. Such phrases as "ideagenic tissue" puzzle the reader, and serve to make visible the darkness of this region Most famous among these products is the word *cerebration*. For the benefit of those who still reverence its charm we may quote the remark of Dr Ireland "Cerebration—what a name for thought! When the liver secretes bile, one does not say that it hepatates, or when a man breathes, we do not say that he pulmonates"

But in spite of crude phrases the efforts of this generation were attended with some success. Laycock grasped the idea that memory might be fundamentally organic, and be analogous to vital processes in plants and animals. The most definite exposition of the general doctrines was produced by Henry Maudsley (*Physiology and Pathology of Mind*, 1867). His works have remained standard contributions to the study of many psychic processes, normal and abnormal, but his adoption of the view that consciousness is a by-product of brain-processes made his work more acceptable to physiologists than psychologists.

It is significant for the understanding of Spencer's psychology that its author began with the "superorganic," the society, rather than the individual. In 1854 Spencer's articles in the *Westminster Review* were concerned with "Manners and Fashion" and "The Genesis of Science," in both of which the development of complexity from simplicity is the guiding idea. In the case of the sciences there is an instance of primitive activities becoming gradually specialized and differentiated, in this case we must think of the mental capacities developing along with the sciences, a mutual action and reaction of outer system and inner thought This idea was reinforced by the embryology of Baer, for Baer's law of development also insisted on the point that development proceeds from the undifferentiated to the differentiated A common formula was thus found for individual and social "organisms," and the way seemed open for a reconstruction of the universe in the light of this formula The "Psychology" came next

Before the *Principles of Psychology* appeared in a second edition (1872) the *Principles of Biology* had been given to the world in 1867 The Psychology presupposes the Biology, for the phenomena of conscious life are a department of life in general This gives "mental science" a place in the general catalogue of sciences, henceforth it will be recognized as one of the natural sciences But this is no more than a device of method, unlike materialism, which thrusts the psychical phenomena into a particular corner of the universe, the evolutionary method of Spencer is indifferent to distinctions of matter and mind, the one dominating question asked about anything is not "What is it?" but rather "Where does it come in the scale of things?" As Aristotle located man between the animals and the gods, so Spencer wedges him firmly in between less organized individuals and those other organisms which presuppose the individual as an element. It is in his grasp of these formulæ which give the mind a chance to arrange and connect things that Spencer excelled. As a result he was able to throw out the most inspiring ideas for the attainment of knowledge, and a scheme such as he suggested for "The Comparative Psychology of Man" was more than equal in value to the whole of his own "special synthesis."

It is difficult to do justice to Spencer in any one department, because his work lay rather in the sphere of co-ordination and correlation than in that of specialized research. Whether anyone can successfully unite sciences without being a master of each and all, is a question which it is convenient to ignore in this connexion. The result of the general survey in its bearing on psychology may be briefly indicated.

If we begin from a primitive matter, or a primitive force, of which matter is a phenomenon, and arrange a scale of phenomena which culminates in Man, we may naturally expect to find that the most crucial point is reached when the structure of the nerves has to be explained from the point of view of sensations. Here the formulæ must either carry us over by their own acquired impetus, or the synthetic philosophy will succeed in everything but the synthesis. Spencer looked to Germany for help, as Bain quoted Mueller, so Spencer quotes Helmholtz. The sensations of tone are built up from units, every sensation in fact is a composite product; the unit is a nervous shock, this is the least common denominator of all sensations, and must therefore be the stuff of which our experience is made by integration and differentiation

From biology in general we are thus led to neurology and to psychology. Having in this way prepared a place for psychology, Spencer does little more than drop into it the traditional Associationism Psychology proper is somewhere elided in this procedure, life in general narrows down to conscious life, and then suddenly expands again into complicated integrations of neural and psychic activity. The life of the mind is brought under the general rubric of a correlation between inner and outer activities The conscious creature reacts to a stimulus, is conscious of the reaction, can have a presentation of the object to which the stimulation is referred, can have later a re-presentation of that primary psychic event, and so on in ever increasing degrees of removal from immediacy. But all this does not ultimately amount to anything, as psychology, except a repetition of Sir William Hamilton's metaphysical psychology. To the absolute division of psychosis from neurosis, Spencer verbally commits himself, hoping to arrive safely at the end of his work by the aid of "parallelism."

§ 4 The retention of Associationism and the habit of dealing only in large schemes seem to be the reasons why Spencer affected the psychologists so much and the psychology so little Spencer's ideas and plans were to be carried out by later workers in the fields of anthropology, sociology, and comparative psychology. Meanwhile normal psychology gained almost nothing from Spencer, psycho-physics did not interest him, and where the language of biology seemed to be unsuitable, the ancient rubrics had to be inserted Yet the Associationists were obviously a disunited party Stuart Mill was restless on the subject of passivity, he lost no opportunity of saying that his esteemed father had overlooked it, and congratulated Mr Bain on having noticed it. In 1873 Mill died, he may be said to have looked upon the promised land and died still looking In his own direct contributions to psychology he attempted no minute analysis or systematic collection of data His interest was more general, controlled chiefly by the desire to put the study of man and of society on a positive basis This was a phase of the "Positivism" which Mill adopted from Comte, but Mill differed from Comte nowhere more than in matters of psychology. Martineau astonished his contemporaries by calling Mill an idealist. The astonishment showed how widespread in 1860 was the belief that no scientific thinking could fail to be "rationalist," and no rationalism could fail to be materialistic. Martineau recognized in Mill a different strain, a leaning to what was commonly regarded as the peculiar attribute of orthodox speculation, for Mill insisted on the dignity of man, on the value of introspection, and on the supremacy of character.

All these were signs of the times. A tendency to revive old controversies about "freedom of the will," a renewed desire for some doctrine of man that did not cut up the living personality into "ideas" and then ingeniously reunite the parts with the glue of "association"—these were the marks by which some new development might have been predicted. Psychology was not the only field of change; in politics individualism was subjected to new and trenchant critisisms; sociology was beginning to restate from a new basis that "evolution of the spirit" which Hegel taught. British philosophy in the hands of T. H. Green definitely renounced its antecedents and began to ally itself with German modes of thought

As we have already indicated more than once, the conflict between the leading writers was making evident the need for some clear statement on the scope and method of psychology. Attention was diverted from the construction of systems to this preliminary question and from the answers offered there emerged a new sense of what was to be attempted. The answers themselves were very different in character and represented the various types of thought then in vogue. George Henry Lewes spoke for physiology and positivism, Mill was in favour of a practical psychology, with modifications due to his belief in personality, T. H. Green was more deeply affected by German idealism, and felt nothing to be so necessary as the complete reform of the concept of consciousness. These three, to whom Huxley might be added, are typical representatives of the secondary forces that made for rightness in this critical time

To the problem of method George Henry Lewes contributed a whole book, published in 1879, after his death. it sums up the situation before 1879, and expresses a definite standpoint and programme[1]. Lewes begins by noticing what was stated above, that "physics and chemistry advance with rapid strides to a fuller and more exact appreciation of their respective phenomena. The same may be said of Biology, but cannot be said of Psychology." The subject of psychology is declared to be the human mind, considered "as the product of the Human Organism, not only in relation to the cosmos, but also in relation to society." Emphasizing this relation to society, Lewes defines Psychology as "the analysis and classification of the sentient functions and faculties, revealed to observation and induction, completed by the reduction of them to their *conditions* of existence, biological and sociological."

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[1] *Problems of Life and Mind*, Third Series, The Study of Psychology, Its Object, Scope, and Method.

The conditions of existence are further defined as the structural mechanism and the medium in which it is placed. This is clearly modelled on the biological formulæ of Claude Bernard; it means for Lewes the rejection of the idea that mind is an "entity inhabiting the organism," and society "an artificial product." Lewes regards psychology as a branch of biology, and defines it as the science of the facts of sentience, not of consciousness. By this change of terminology he hopes to avoid any suggestion of a gulf between mind and life; the "spiritual facts" are a distinct sphere, but not more than that; they are the sphere of sentient functions as distinct, for example, from the "conditions of their production, which is the sphere of Physiology." Physiology is in fact dependent on psychology; psychology is dependent on physiology, for sense on its receptive side is an organic function; so that a theory of the soul requires a combination of subjective and objective data.

Lewes believes that every organic state is both physical and psychic. By using the term "sentience" for consciousness he means to imply that sensibility is a "vital property of tissue," which may or may not rise into consciousness. To call psychology the science of consciousness is to limit it, for consciousness is only a part of sentience. The antithesis of mind and body is a mistake which has arisen from regarding the distinction between "conscious" and "unconscious," as equivalent to the distinction between "mental" and "physical." Thus "paradox of Descartes" must be rejected; we have no "grounds for degrading any action of a sentient mechanism from the psychical to the physical sphere solely because it might pass unconsciously." The mechanical process may be conscious, and the conscious process is always mechanical: the processes may be classified, but not under the rubrics of Body and Mind. Lewes therefore refuses to accept the view that a decapitated frog responds to a stimulus unconsciously: he believes that the nervous centres of the spinal cord are fully sentient, and that reflex action is accompanied by sentience. This affects his interpretation of mechanism. He will not speak of sentience as directing mechanism; he refuses to separate the two, and therefore takes "mechanical" to mean according to law: there is psychic mechanism as well as physical mechanism, or rather there are distinguishable factors in what is actually a psycho-physical mechanism.

Biology is placed by Lewes between Cosmology and Sociology; psychology is a department of biology. This classification is dictated by the emphasis which Lewes lays on the relation of mind to society, and of society to the mind. In brief, he thinks of psychology as studying sentient processes in the organism and intelligence, which is sentience developed through social relationships As a discipline psychology is the basis of education and government, a view which he shares with Spencer and Mill, language, science, art arise from this social medium, constituting the data of collective psychology; history takes its place among the sources of psychological data, for some experiences are "only possible to the collective life" The method of psychology includes (a) the subjective analysis and introspective method, (b) the objective analysis, the observation of data furnished by history, the study of animals (only intelligible "by a light reflected from the study of man"), and social relationships Comparative psychology Lewes thinks is not a source of much information. This, he very characteristically explains, is not because man is wholly different from the animals, but because to the "three great factors, Organism, External Medium, Heredity, which Human psychology has in common with Animal psychology," it adds a fourth, namely, relation to a Social medium, with its product, the General Mind

The idea that psychology ought to be a science was common to Lewes and Mill, but they differed in their idea of this science Lewes definitely regarded it as a branch of biology. Mill inclined to regard it as a separate science united to the others in respect of method rather than matter. We have seen how Mill shared the tendency to make an advance from the position of his father's *Analysis*. In his *Logic* he gave an explicit statement of his position, contributing to this science what he contributed to all, clearer rules of procedure than were previously known. According to

Mill there is room for a special science of the mind, because the feelings are inner states that have no known connection with the body He admits that every mental state has a nervous state for its antecedent, but adds that we are "wholly ignorant of the character of these nervous states." The science of mind is made possible by the fact that "there exist uniformities of succession among states of mind." Beyond this Mill does not care to go, for he is chiefly concerned to arrive at his next point, the possibility of a science of character, Ethology It is on the practical significance of the science that Mill concentrates his forces[1]

Lewes saw the weak point in Mill's position He accuses Mill of not knowing enough physiology, says that he adopted the doctrine of the spiritualists without accepting the "animating spirit," and considers it a strange incongruity "to regard the mind as a function of the organism, and yet suppose that some mental functions had no organic conditions" To this attack Mill could have retorted that his idea of the method of psychology was not affected by his view of the Ego but it must be admitted that in the main the attack was justified The fact which most troubled Mill was the necessity of defining a science which began from sensations (so obviously liable to be claimed by the physiologists), and ended in processes which Mill was inclined to regard as almost, if not quite, independent of the organism. The same point troubled Spencer, and he, too, fell an easy victim to the criticism of Lewes.

Spencer was wholly concerned with the problem of finding a place for everything and putting everything in its place To get over this difficulty about the sensations he created a sub-department of Aestho-physiology, a preparatory study leading to psychology, but not forming part of it. Having thus segregated the sphere of sensations, Spencer goes on to declare that Psychology is not only distinct from, but antithetically opposed to, all other sciences. His main reason for saying this is that the thoughts and feelings which constitute a consciousness, and are absolutely inaccessible to any but the possessor of that consciousness, cannot be classed with the existences with which the rest of the sciences deal. It is a little curious after this to find that Spencer thinks the odours which are inappreciable to man may have a distinct effect on the consciousness of a dog. Here Spencer feels able to transfer from a consciousness, which he alone could know, an effect (defined as unknowable) to another consciousness which, on these premises, could not be known at all. Clearly something requires correction.

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[1] This particularly appealed to the French, *vide* p. 247.

Through all these disputes about the aim and method of psychology there began slowly to emerge a definite attitude of mind This was largely due to the work of Charles Darwin. Though evolution and development were ideas as old as Thales, no scientific value could be given to them unless the processes of which they consisted were studied and formulated To this inductive aspect of the subject Darwin applied himself, after 1859 no well-informed writer could ignore the fact that in every subject the genesis, as well as the static form, of the product must be considered. In the sciences of life there was a large mass of accumulated material dealing with organs and functions that seemed to exist together for no particular reason, lower levels of action remained when intellect had already supervened, and obsolete organs existed as a wanton challenge to all who believed that everything was created by one original omniscient act. Under the impulse of Darwin's work this accumulation of material was temporarily reduced to order. If, broadly speaking, it is possible to regard Nature as ceaselessly and infinitely productive, if at the same time the conditions of production are not the same as conditions of permanence, but every production is tentative, a kind of experiment which may or may not succeed, then the chaos of material may be viewed as a new kind of order, the dynamic order of perpetual production and selection

The publication of the *Origin of Species* in 1859 is an event of peculiar interest to the psychologist, for it was not only a scientific achievement, it was also a spiritual crisis. It is notorious that in the land of its origin Darwinism seemed to many only a new name for atheism, it is enough merely to recall the old antitheses which furnished innumerable title-pages, such as creation and evolution, science and the faith. The intelligence that fastened on Darwinism as the chief of offences, was not misguided: other doctrines, notably the materialism of 1860, could be ignored, but the new mode of thought had come to stay, and with it accounts must be settled once for all. With the decrease of asperity on the one side and of exaggeration on the other, a new generation of writers began by assuming what their fathers disputed, and then proceeded to carry on the work of Darwin, both to amplify and to correct it. For the psychologist the gain lay chiefly in a fresh impulse to study origins and to take a genetic point of view. In consequence there was a movement toward a general biological treatment of mental functions, a renewed interest in animals, in children, and in the questions which concern environment taken as primarily social.

All these topics had already travelled far enough to reach the fringe of consciousness Bain had shown no small appreciation of the possibilities inherent in psychology, while Spencer, J S Mill, and Lewes had almost grasped the meaning of comparative and social psychology But Darwin (and with him Russell Wallace) was the real driving force, though Spencer's use of the evolutionary scheme had more general influence than any other production by reason of its comprehensiveness. Darwin's specific contributions to psychology were not large in quantity. To child-psychology he contributed a specimen of his method in the study of the daily life of an infant to animal-psychology his most significant contribution was the treatment of instincts as modes of action dependent for their character on the progressive refinement of the organism and for their purposiveness on the fact that only actions which attain useful ends could be consistently employed by generations of creatures. To the study of emotions Darwin contributed the classical example of the method of expression. In his work on *The Expression of the Emotions in Man and Animals*, Darwin not only recorded facts by observing the appearance of animals when pleased or displeased, but also to a great extent inverted the common view of the subject; for he regarded the expressions as the organic side of emotions, and also as the relatively permanent element, since the organic structure is inherited, and can only be modified gradually. An emotion is therefore fundamentally a habit of the organism; consciousness is a comparatively insignificant element in a total state which includes a great variety of organic reactions; for anger, to take only one example, consists in bared teeth and bristling hair, quite as much as awareness of the opponent or the particular offence. The fact that emotional expression often contains movements that are apparently meaningless was explained by Darwin on the principle of "serviceable associated habits"; the mode of expression was originally a serviceable action to attain an end, but the change of circumstances has modified the conditions, and so the original action has become a superfluous habit, linked by association to the feelings as they arise. Lastly, to the higher life of mind, the social and the moral, Darwin made a significant contribution in the *Descent of Man* (1871). The now famous chapters on the "Comparison of the Mental Powers of Man and the Lower Animals" laid a strong and broad foundation for all the work which has subsequently developed our knowledge of animal societies, human societies, and of the relations between these in reference particularly to the part played by instinct (whether identical or analogous) in the collective life of human and subhuman species.[1]

In speaking of Darwin we speak of evolution, but they are not altogether equivalent. The statement made above, that biological interests developed under the influence of Darwin, requires to be explained further. Heredity is the central problem, and in it the central question is whether or not successive generations inherit the modifications which are acquired by their predecessors. To this point Darwin gave little attention; the arguments for and against belong to the Lamarckists (e.g. Spencer, Wundt, and Cope), and their opponents. Herbert Spencer, for example, asserts that an instinct is inherited experience, assuming that the habits of the ancestors are inherited by the descendants in the form of organic structures and tendencies to action.

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[1] The views on speech here given were developed by A. Schleicher, *Darwinism tested by the Science of Language*, 1869. Application of the method to colour-sense was made by H. Magnus, *Die Geschichtliche Entwickelung des Farbensinnes*, Leipzig, 1877.

Haeckel, realizing the difficulty of saying that a *habit* is hereditary, plunged further into speculation, and declared that the characteristic of all organic matter is reproduction, and reproduction is memory. Thus, the elements which successively combine to make organisms are "souls" with an inherent tendency to do again what they did before. A similar view was expressed by Hering in 1870, when he published his essay *On Memory as a General Function of Organic Matter*; in the form given it by R. Semon (*Die Mneme*), and in the more readable work of Samuel Butler, this doctrine has obtained a vogue beyond its deserts. The use of the term "Memory" in the phrase "unconscious memory" is a poetic licence which has been a snare. The biologists did not, in fact, propose to explain memory, as normally understood they were merely using a term to express the continuity of cell-structure or organism Though Hering uses the term Memory (*Gedächtniss*), Semon more correctly employs a "term of art," Mneme, and rightly gives a new name to what he regarded as a new principle. None the less, for psychology, the outcome has been, and still is, a deplorable confusion. A book on Memory now starts with anything that can be regarded as "after-effect of external circumstances," continues with all forms of regular repetition (vegetable, animal, and organic "rhythms"), proceeds to comprehend habits of all kinds, and ends with human memory in which appears as a sub-species the process of conscious association and recollection. This affords matter for contemplation. Nothing more significant for the history of thought can be quoted. In Plato or Augustine memory was the supremely spiritual element in man, because it alone was essentially continuous; whether linked with the transmigration of the Pythagoreans or the immortality of the Christians, memory was the name of the undying function which for ever perpetuated itself by summing up the past in its eternal present. In the modern exponent of science memory retains all this significance for the opposite reason; though we cease to speak of the soul, immortality remains in the matter that is never destroyed, and the energy that is never lost; though we turn away from Plato or Augustine and say their psychology was nothing but theology, we find that we have turned to another psychology which seems to be equally remote from the limited "science of the human mind," which rationalism once regarded as its symbol of enlightenment. Nothing in this sphere is finally settled the evolution of doctrine, as Spencer said, is a part of the whole evolution we shall have more to say later on the different departments whose origin in the genetic way of thinking has been noted here; but the ideas of evolution and of memory have been so closely related one to another that attention might well be directed at this point to a subject so attractive and so significant.

For the psychologist the natural focus of interest is the possibility of assigning to consciousness a definite part in the progress of animal life. It seems obvious that consciousness must have some "survival value" on any theory; since it would be a singular perversion of thought to suppose that the acknowledged climax of all evolution was itself a superfluous accessory. The obscurity of the subject has been a deterrent, but the problems of instinct cannot be ignored and their solution has been looked for in a theory of "functional selection" or "organic selection," which definitely employs mental powers as agencies The co-operation of the physical and the psychic factors which this theory employs is explained by giving to the body a capacity for producing various movements, and to the intelligence a power of selecting, and so finally establishing, some modes of action in preference to others Tendencies toward such an interpretation of life may be found in the earlier works of Bain and Spencer, who both described the formation of habits as a process of selection in which the movements attended by pain or lack of success were gradually eliminated. If in this or some similar manner pleasure, pain, and attention could be regarded as clearly operative in the whole process of evolution, the union of biological and psychological points of view might yield new insight into the whole study of life Since the original suggestion (1896) of such a programme by Lloyd Morgan, J. M. Baldwin,[1] and others, much has been done to utilize and extend

[1] See *Darwin and the Humanities*, J. M. Baldwin, 1909, chap. i.

these principles through the study of "animal behaviour" (*vide* p. 299).

§ 5 We have now followed, with necessary brevity, the movements which occupied the interval between the first works of Bain and James Ward's article on Psychology published in the *Encyclopædia Britannica* (1886). The comments which this at once evoked show that it was estimated as the beginning of a new attitude toward the problems of mind. The article clearly challenged the Associationists to show cause why they should continue to exist. No one wished to deny the value of the laws of Association as true for some aspects of consciousness and some of its connections; the question here put to the issue was whether "association" should be regarded as the bedrock of all mental complexity and unity, or whether it was a minor affair dependent upon some larger and deeper conception of unity. Ward's article was a statement of what would be involved in such a conception of unity, it formulated and partly applied a scheme of psychology for which the terms "continuity" and "attention" were primary, and in which all the tendencies toward an emphasis on activity and on the priority of discrimination, already fostered by Bain, were developed so radically that it was useless to look upon this as anything but a new beginning.

The importance of the crisis was fittingly recognized. Bain gave a long account of the article in *Mind* (1886), and followed this up with an article "On 'Association' Controversies" in the next year. Nothing could have more historical interest than this direct conflict between the author of the new article and the vigorous thinker who was prepared to stand by the position he had taken thirty years before. In spite of his years—nearly threescore and ten—Bain was still a powerful debater; his trenchant style seemed to have gained in flexibility and grown richer in homely phrases that come like upland breezes through the chambered heat of controversy. To learn the meaning of this page of history we shall go back to these articles.

Bain does not stint his praise. "The work," he says, "has the rare merit of being Psychology, and nothing but Psychology: it is nearly complete as regards fundamental problems, and the ultimate analysis of the distinctive properties of mind." Again, after reviewing the detail, he says that "when matters excluded by the narrow limits are filled in," "Mr. Ward will have produced a work entitled to a place among the masterpieces of the philosophy of the human mind." The nature of this appreciation will be more intelligible if another point is recalled. In saying that Ward's article is "nothing but Psychology," we need not suppose that Bain has repented his own physiological matter. Ward's article succeeded the article by Mansel on "Metaphysics," which in the earlier editions of the *Encyclopædia* supplied the needs of the time by dividing Metaphysics into Psychology and Ontology. No one had done more than Bain to upset that arrangement, and he might legitimately regard the independent status of psychology in this ninth edition of the *Encyclopædia* as a tribute to his labours. Bain is thus seen to stand between psychology as an academic branch of metaphysics and psychology as an independent science; he is also seen to be the principal agent in putting psychology among the natural sciences; and, finally, in respect of Ward's article, he is seen to be the representative of a psychology which had fallen under the suspicion of being really in bondage to its own allies, the sciences of chemistry and physiology. This is, in epitome, the history of British psychology from 1855 to 1887.

Several influences, direct and indirect, enter into that intellectual current, which we are here regarding as finally arriving at the "Psychology" of the *Encyclopædia Britannica*. Green has already been mentioned, and equal or greater importance must be accorded to the *Principles of Logic* published in 1883 by Mr. F. H. Bradley. The ethical, logical, and metaphysical writings of Mr. Bradley, together with his critical articles on subjects like "activity" (published in *Mind*) have exerted an influence on psychology, always in the direction of ideas opposed to Associationism. James had already begun, also in *Mind*, to stir the atmosphere and clear the air of academic hot-houses, while

Wundt's work was great enough to produce an immediate effect far from its point of origin. In England Sully was already known as the author of important psychological works, which ripened and matured later The recollection of these facts will help the reader to comprehend more exactly the relative importance of the article now to be discussed.

While Bain valued Ward's article as a sign of progress enfeebled by the tendency to go too far, Ward hardly saw how much Bain was conceding, and resented his criticism of the innovations. In 1859 Bain had himself been a daring innovator; he had begun the "activism" that was to be at once the support and the destruction of his own school. This feature, which distinguished the "Emotions and the Will" from the earlier work, had been the key to Bain's later writing we find him speaking of "the stream of consciousness," of change as essential to all conscious experience, of discrimination as prior to association, of the will as fundamental and not derivative from ideas—in fact, almost all the modern machinery is implicit in Bain Yet there was a further step which Bain would neither take nor allow others to take What that step was we see best in Ward's article

Psychology, according to the terms of this article, is concerned with certain phenomena which are not specifically "inner" as opposed to "outer," nor "mental" as opposed to "material," but are certain distinct characteristics of conscious individual life. These characteristics must be assigned to a subject or Ego A sequence of "states" has no inner unity and could not know itself, there is an agent as well as an action, and in addition to knowing, feeling, and doing we must admit *that which* knows, feels, and does. From this basis it follows that the most important characteristics of mental life are those which depend upon this agent, such as activity in the form of attention, reproduction of experiences, and the higher activities in general. If the Self or Ego is not to be some detached essence it must be equivalent to the total state of consciousness, regarded as the inner unity of self-knowledge. Every distinguishable element of the mental life is therefore a phase of its activity;

it is no more separated from its phenomena than the moon is separated from its phases: the subject *is* the knowing, the feeling, and the doing in their own living unity. If this subject could be regarded as having its object in itself to begin with, nothing more would be needed; experience would then be simply the evolution of the subject; but this is not the case, and we have to deal with the fact that the material is largely given. This material consists of presentations, which are either sensory (sights, sounds, colours), or motor, the latter being equivalent to consciousness of efferent processes as means of producing effects in the outer world The processes which constitute the life of consciousness are, in their simplest formulation, a presentation which induces attention, a feeling which marks the attitude of the subject in relation to the presentation, a voluntary direction of attention to motor presentations from which result changes in the field of consciousness.

The affinities of this doctrine are easily recognized. Kant's "pure *Ego*" is the ancestor of this "subject"; Fichte's way of developing the content of mind by a purely idealistic inner movement is avoided, Hegel's grasp of the fact that subject and object are not primary given distinctions is utilized, with the necessary amendment that for psychology the actual growth of the idea of a world is due to experiences in which we *react*, in which therefore the mode of action is determined by conditions which do not originate in our own consciousness Bain could adjust himself to this outlook He saw "no insurmountable difficulty" in "a series of states being aware of itself." This bold assertion, which flatly denies the main contention of all the critics of "Associationism," is well made; for the idealist (notably T. H. Green) is much too ready to press home this difficulty of "series." From Locke onwards the British psychologists were not aiming to prove that any sequence results in knowledge; they were entirely concerned to show the fragmentary character of all experiences as given in the sequences of life; they were most of all concerned to prove that one could not retire within oneself and there find the whole mental furniture at home at one time. The restoration of the "subject" looked to Bain like a return to the old obscurantism which defied analysis; he saw no advantage in the return to a concept which evaded definition and yielded nothing but speculative deductions, while he was not conscious of any intention on his own part to deny that the "states" were states of something It is convenient, he says, "to have a something 'in the chair,'" but it is hard to say what the chairman is to be. Some comfort is derived by Bain from noticing that Ward's "subject" is to be taken with qualifications, for it is admitted that the mental life as a process is made up of presentations, and the subject as such is never presented On these terms Bain is disposed to let it pass, so long as it is not made a "nucleus and a hiding place of mysticism"

Ward proceeds to treat of the unity of consciousness as a "continuance", in other words, to deny that the essence of mental advance is "the combination and re-combination of various elementary units" On the contrary the whole process must be regarded as the gradual differentiation of a primary unity mental chemistry must be abandoned. Bain retorts that the old method was right; "our education from first to last takes principally the form of adding unit to unit" Here we reach the heart of the whole matter, here the early education of Bain proves a "prejudice," which utterly blinds him to the real issue For Bain, Mill, and Spencer never seem to have realized how entirely the concept of sensation had changed since they first learned the grammar of their science It would be right to say that a word is made by adding one letter to another; it would be wrong to say that language had evolved from a chaos of letters into an ordered system of letters. While Bain thought in terms of anatomy and physiology, or Mill talked of chemistry, Ward was employing the notions of biology. From this science came the inspiration to treat the mind as an organism which grows by continuous differentiation, which needs only nutrition and assimilation, which presents ultimately a collection of "parts" that develop in sustained relations and never change without involving a reciprocal change throughout the whole structure. The theory of language and the theory of society were also affected by this idea; in applying it to psychology Ward did not abandon science, he abandoned only those scientific formulæ which were the framework of Bain's methods.

Bain is prepared to go a long way in making concessions, but he remains unenlightened on this point. To him the old idea of simple sensations seems fundamentally true. He admits that sensations once thought simple are really complex; but that is only a matter of degree He cannot grasp the significance of treating sensation as a function, a living operation with an infinitely variable content. "When the sensation is simple," he declares, "as the colour of gold, repetition merely deepens the impression on the memory" In brief, Bain is prepared to change the elements of the mental life, but not to change his idea of that life; Spencer, too, was open to this charge, for he did even more to show how utterly the old material was discarded, and yet he clung to constructive methods that could only work if that material was still used

Bain has now shown that he failed to understand Ward, from this point onwards his remarks, whether made to praise or blame, are consequently of inferior value The rest of the exposition may be taken directly from Ward's article, which fully deserves to have the last word

The position adopted by Ward tends to involve the rejection of physiological explanations Accordingly Hamilton's assertion of latent mental modifications is supported against Mill's criticism that these modifications must be stated as dispositions of the nerves Leibniz and Herbart are here followed in preference to the current British teaching At the same time the Law of Relativity as stated by Hamilton and Bain is rejected; Wundt's position is also partially discarded; and the conclusion is reached that, while "there is no unalterably fixed unit," the "mutual relations of impressions" is not everything.

Sensation and movement are treated by Ward as aspects of a continuous psychic life, their present differences being due to evolution. This treatment adopts the general principles of evolution, but rejects the physiological form given to the theory by Lewes and Spencer. While the latter attempted to derive the variety of sensations from "some simple primordial presentation," Ward conjectures that the original matrix was a general "organic sensation" corresponding to the general physiological action of the various stimuli In other words, primitive sensation must be conceived as undifferentiated, a condition in which seeing, hearing, tasting, smelling, and touching were all indistinctly represented This might be compared with Kant's idea of a primitive chaos (or "manifold") of sensations as the antecedent of distinct knowledge That this doctrine of Kant was in Ward's mind is shown by the reference to it which occurs in the next paragraph, on Perception We are warned that the progressive differentiation of our senses does not go on alone, there is an accompanying integration by which the elementary presentations are continuously formed into complex groups. The "presentation-continuum," or mere transition from state to state, would be "little better than the disconnected manifold for which Kant took it" if some other factor did not enter in and dominate the situation. That factor is subjective selection which emphasizes (by movement) one part of the total presentation and represses the rest.

This notion is open to criticism, but we shall not delay matters by raising problems. At this point we can see most clearly where and how the fundamental concept of activity is brought into action by Ward We are asked to accept an original power of reaction which is not a physical but a psychic activity; it is not Bain's original idea of innate energy, but a totally different notion of pure spiritual agency. From this follows automatically the substitution of this agency with its selecting and assimilating processes for all that Bain and J. Mill described under the name of "association" The activism of the German school is now developed, and the theory gravitates toward the tradition of Leibniz and Herbart. Experience, which is the life of the mind, does not consist of parts added one to another, atomically. There is a given material and a synthesis, but the material does not furnish its own synthesis. Where then does this element, the form as distinct from the matter, come from? Ward replies that it comes from us, from the active organizing subject. This is announced as the signal merit of Kant, the recognition of a synthetic unifying agency, a primary apperceptive power. The modes of this activity are the (Kantian) categories, they are the laws which the mind brings to bear on its material. But these are not innate properties of the self; they are the gradually developing modes of its activity, and the order of their emergence can be observed: they are not transcendental principles of mind regarded universally, but organic principles of individual conscious existences. Time and space are the first of these organizing principles; unity, identity, resemblance, difference come next, the higher intellectual categories come latest (substance, cause, etc.) Though subtle, this analysis is not trivial Psychology must deal with the nature of thought, and must therefore come in its systematic procedure to these factors Ward took up a strong position in refusing to sacrifice them to Associationism, and his analysis was carried unflinchingly through its severest trial It is a duty to the author not to shirk the task of grasping the difference between a logical and a psychological view of categories For the logician categories are instruments of thought and forms of the relations between thoughts For the psychologist they are activities, more akin to the typical forms of growth which biology describes, and capable of arrangement in reference to the stage at which they appear or the level at which they are active. In adopting the latter standpoint Ward preserved his fundamental thesis, the possibility of an independent psychology which should be neither physiology nor epistemology, and the Kantian nature of the exposition must not be allowed to obscure the real difference between Ward's psychology and Kant's epistemology.

Hume's distinction of the image from the idea, on the ground that the former is "livelier," is rejected in favour of a more direct analysis by which it is shown that the image does not differ from the idea in respect of intensity, but in its own character as being akin to the presentation-continuum. This means that images as such are not associated; they may contain connected elements (called, after Herbart, their complications), but only ideas are capable of true association. Images stand close to sensations, but do not involve feeling; as Bain puts it, "they float in a level of their own." Next comes the "memory-after-image," as described by Fechner. This introduces the "memory-continuum," a mental stratum overlying the "presentation-continuum," and involving retention and reproduction. Here we have all that Ward admits in the way of Association, namely, the control of the sequence by "contiguity." Association by similarity is rejected because, in this type of psychology, similarity cannot be an attribute of ideas; on the contrary, it must be an active recognition of the relation between a present and a former state of consciousness The reproduction is achieved by other factors; the similarity is detected *after* the reproduction, being, in fact, due to subsequent comparison The last point which can be mentioned here is the application of continuity to the subjects of time and space In dealing with space, Ward introduced the term Extensity to denote pure quantity of space, as, e g, the sensation of contact over an increased area when the hand is slowly thrust into water; for the rest his doctrine is based on Lotze's "local sign" theory. Similarly, in relation to time, Ward favours the idea that succession as observed is the succession of emphasized points in the continuous tissue of consciousness. If we compare a "crowded hour of glorious life" with an hour of dullness, the former seems in retrospect to be longer, though in experience it was shorter, this indicates that "time, as psychically experienced duration, is primarily an intensive magnitude." The perception of time is therefore different from the conception of time, the latter is a uniform scheme, but the former is an intensive experience depending on acts of attention which punctuate the "presentation-continuum"

After elaborating in the sphere of sensation and cognition what we might designate as a theory of the tissue of psychic experience, Ward proceeds to deal with feeling. Since feeling is coexistent with the other distinguishable types of function, it can be dealt with according as it accompanies each of these (sensation, complex states of sensation, and movement, the flow of ideas). Passing over the detail of this part we come to "emotional and conative action."

The treatment of this was foreshadowed earlier when the author declared that activity is present from the first, and that it takes the form of selective movements. Primarily such movements may have been established by "natural" selection, but "purposive" selection began to take effect at a very early stage. While feelings are connected with movements, the emotions are to be described as total states of consciousness which involve forms of expression; the importance of the distinction being that the movements in the latter case are selected, purposive, and capable of reinforcing the emotion as a whole Here the movements differ entirely from reflex movements, the movement does not account for the feeling, the feeling accounts for the movement. As the mind attains higher levels there is a gradual loosening of the bond between particular feelings and particular movements, the idea enters in and gives remote objects for our striving, the conative element is thus employed on the highest level of psychic life, and becomes desire and will The coexistence of differentiation and integration is preserved to the end. For intellection is the process by which desire attains the means to its satisfaction. The flow of ideas becomes more developed and acquires a degree of synthesis through associations; desire prompts to "a mental rehearsal of various possible courses of action", the two lines of advance are united in the total psychosis of the mature mind The analysis of intellectual activity is therefore achieved when we can distinguish the typical forms of its synthesis, which differs from associative synthesis in being purposively selective.

An article written for an Encyclopædia is necessarily condensed, a further condensation might seem to be little short of mutilation. The end must justify the procedure, and the end here kept in view was to show how a new phase of psychological theory appeared in England. Its coming was clearly due in part to a better knowledge and fuller appreciation of German research and speculation. But it was no mere importation. The influence of Bain and Spencer is not to be overlooked. Ward broke new ground on one fundamental point—the idea that life and growth belong to the mind as truly as they belong to the body.

The total impression, which we have aimed to reproduce in the account here given, is that of a process which must be described piecemeal but takes place always as a whole, it is an impression of organic unity, an impression of vital impulse ever extending its unity over a greater variety and complexity of action. To grasp this idea is more important than disputing details, for out of the idea comes inspiration.

§ 6. The works of James Sully, Professor in the University of London, began to appear in 1874, when *Sensation and Intuition* was published The *Outlines of Psychology* dates from 1884, the *Teacher's Handbook* from 1886 (fifth edition, 1909), and the main work, *The Human Mind*, in 1892. These writings represent a distinct type of work, essentially systematic and designed to present the material as it was obtained in an orderly and intelligible form Sully's genius was for detail, close analysis, and instruction He never seems to have undergone a spiritual crisis nor felt the necessity of it: he moved with the times, and was in sympathy with the experimental tendencies of his day In general character his work never seems so far from the standpoint of Bain as does that of Ward There are new facts, but no new "system" beyond what is recognizable in fresh arrangements of the matter and fresh details The departmental works on *Illusions* (1881) and on *Laughter* (1902) show most completely the author's power of analysis and painstaking discrimination The application of psychology was a development greatly assisted by Sully, who not only wrote psychology for teachers, but also wrote on childhood (*Studies of Childhood*, 1895), and was the founder of the British Association for Child-study

The philosophical outlook which gave a distinctive mark to Ward's *Psychology*, and was conspicuous by its absence in the more empirical attitude of Sully, has been again made prominent by G. F. Stout The *Analytic Psychology* of 1896 was followed by the *Manual* in 1898, and the *Groundwork*, 1903. Each work has a degree of individuality and exhibits changes of thought, but in essential matters the *Analytic Psychology* is not superseded by the later (and briefer) expositions. A study of Herbart's Psychology

(*Mind*, 1888) showed the pre-occupations of the writer at that time, and the influence of Herbart was abiding. This influence, however, was not enough to make Professor Stout a Herbartian; he would be more correctly described as a follower of Ward if his independence did not justify the statement that his psychology is not to be treated as a mere reflection of any other theory. For his own part Professor Stout seems to acknowledge most indebtedness to Brentano

In its broad outlines the *Analytic Psychology* is a study of the structure and processes of the mind It is devoid of physiology, and so far aims to be "pure" psychology. In this respect it is akin to Ward's article, and goes even further in the emphasis laid on activity. It is in a sense an introduction to the whole subject, for the genesis of the mental structure was the task first undertaken, but this genetic psychology presupposed ideas which seemed to require to be treated first; the genetic psychology was accordingly postponed until the analytic had been satisfactorily elaborated. The scope of the undertaking was therefore automatically limited The first book deals with the elementary modes of consciousness and aims to fix their number and their nature; the second is devoted to the laws and modes of change. The principal achievement of the first volume was the re-statement of the idea that consciousness has three fundamental modes, thinking, feeling, willing. While the idea was not new the establishment of it was original; against the Kantian view that these modes are ultimate because irreducible, the author argues that many other modes are equally irreducible; the distinction of modes must not be treated as a discrimination of irreducible contents, but as a distinction of attitudes. The matter given to consciousness is the sum of presentations; to each presentation there is a possible reaction in one of three ways. If the presentation is referred to an object, and regarded only as significant, we are said to think; if we find ourselves in an attitude of liking or disliking, we have the volitional or conative mode; from this arises pleasure or pain. The striking points of this statement are the emphasis which falls on conation, a term derived from Aristotle through mediæval Latin, and wholly saturated with the Aristotelian conception of striving or the biological notion of dynamic states; and, secondly, the way in which feeling is made an attribute of activity and secondary to it; pain is equivalent to hindrance, pleasure is the tone of unimpeded action. In reality then, only two modes are fundamental; we either think or will. But even this duality seems reducible, for both are processes of a vital kind and no more than aspects of vital action. The effort which is the essence of all life is an effort of self-maintenance, that striving which Spinoza called conatus, and Avenarius elaborated in the doctrine of "vital series." Thought and will are operations by which the creature strives to regain its lost equilibrium. Their unity does not consist in the fact that will involves ideas or consistent thinking involves attention and will, though Green adopted this way of reducing plurality to unity. Stout, being a psychologist and not a dialectician, avoids that argument for ultimate identity; it is the underlying unity of the mental organism which he seeks to exhibit, and this really means that we cannot speak of thinking and willing, passive and active powers, but only of conscious activity—in other words, of thinking or conscious processes.

Thus the second book which deals with this mental activity as a unity is concerned with its complex forms in their unity, that is to say, not the (mechanical) parts of our consciousness, but the (biological) development of its organic totality. Thought is the creature's way of satisfying its needs, including its need of thoughts; and therefore thinking is a kind of adaptation or invention by which the organism sustains its relations to the environment of circumstances. This is the description which can be given of mental life; it requires for its supplement an explanation of the ways in which the relations are sustained, and this genetic part is still awaited. In spite of this lack it is true to say that by its careful elaboration, its subtle but clear arguments, and its constructive breadth, the *Analytic Psychology* has been one of the most influential works produced in Great Britain during the last quarter of the nineteenth century. The later manuals mentioned above are well known and need not be described in detail.

THE PROGRESS OF PSYCHOLOGY

GENERAL SURVEY

§ 1. THE history of psychological theories in France entered upon a new phase in 1870 Whatever else may be thought of the work done by Taine, no one would deny his right to be considered the leader of the empirical school and the exponent of concrete practical methods of study. The movement was a reaction for which considerable preparation had been made in several directions In 1870 France began to realize the full significance of the fact that Cousin was dead. That great philosophical dictator left no successor there could be no second Cousin with the same power of historical compilation, the same zeal to make the mental sciences part of the national life, the same anxiety to be at once both great and conspicuous. Even before his death rebellious spirits had murmured this was no more than a sophist, a philosophe-orateur, and foremost among these was the young and journalistic Taine. Born in 1828, Taine was brought up in the Eclectic school, but at the age of twenty-three abandoned it to take up an attitude of hostility which was fostered chiefly by the study of the sciences, especially anatomy, mathematics and physics. The result was the usual tendency of the young to feel that the philosophers were not moving as quickly as they should, and in 1856 Taine helped them to move on by the publication of the series of essays entitled *Les Philosophes Classiques du XIXe Siècle en France.* With inimitable literary skill Taine sketched the history of philosophy in France during the preceding quarter of a century, and the book, destined to run through seven editions, was from the first a force to be respected Such books cannot afford space to be complete and their writers cannot spoil the chances of victory by fine considerations of justice. Taine was not just, but he achieved his purpose, which was the condemnation of the whole trend of French philosophy since the days of Condillac (see p. 18).

We might say that at this time Taine's motto was "Back to Condillac." The philosophers had lost the respect and confidence of the men of science, and Taine, with one foot in philosophy and one in science, felt aggrieved at the way in which the national philosophy was falling behind the progress of research. This state of mind implies of course a contempt of metaphysics and Taine's real mission did not amount to a constructive philosophy but a very limited attack on the points which were of interest to him, the problems of physiology and psychology. We shall enter upon no disputes at present about the value of this kind of outlook, but take a retrospective glance at the developments which culminated in this revolt of the empiricists.

The general idea entertained about the method of Condillac was that it kept to the sure ground of experience and could be trusted. This was fostered by the fact that the spirit of enquiry which was active at the time, coexisting with the supremacy of Condillac, though not otherwise related to him or his method, produced a vigorous movement in the sciences both of body and of mind. Under the somewhat vague term of Ideologist the historian groups men like Cabanis, Broussais, and Bichat, a group of speculative physicians, De Stutt de Tracy, Laromiguière, Cardaillac and other philosophical writers; while the period was made famous by the names of Lamarck, Biot, Flourens, and others whose fame spread over Europe and made Paris the centre of European learning. This pre-eminence passed by degrees from France to Germany, and in 1870 the French were conscious that they had lost to some extent their prestige, and those who looked at things from the point of view of the politician were anxious to find the reason for this apparent degeneration. Taine laid the blame on the spiritualistic school of Maine de Biran, and his sentiments are echoed in all the writings of the empirical school.

The ideologists were concerned with many things beside psychology, but they made one contribution to the progress of that science by their consistent efforts to explain the nature of mental activity. The mere analysis which Condillac made so clear and attractive was superseded by this demand for some deeper penetration into the mystery of the living mind, just as the physiologists were influenced in the direction of vitalism by their dissatisfaction with a mere description of the mechanism of the body. The vitalists were going back to Stahl the psychologists were really moving across from the territory of Locke to that of Leibniz The movement was weak and stopped short of the goal De Tracy and Laromiguière went no further than the assertion of a specific activity which was the active element in the perception of resistance and the contribution which the individual makes to the act by which external reality is perceived From this point, which belongs to ideology rather than psychology, the school diverged into speculative philosophy tempered by interest in language and signs The quantity of the work done was not great, but it has a distinctive quality, and the analysis of resistance, with the consequent development of the sense of effort as a fundamental part of experience which could not be given from outside, was an important contribution to psychology There can be no doubt that the friendly visits of the Scotch philosophers to Paris during this period were accountable for the originality of those who tried to improve on Reid by this same process of emphasizing activity

Together with this speculative element the Ideologists retained the practical and empirical mood of the age They were at peace with the men of the world and those who came into contact with the daily needs of men. The politician, the men of culture, the healers of the body were kindly disposed toward these thinkers, and De Tracy has the reputation of being the only philosopher who has invented a new dance. But a very different type of man was coming to the front under the guidance and encouragement of Cabanis. Maine de Biran, though he was a soldier by profession, at times a man of affairs on a small scale, and a figure in the cultured circles of Paris, was at heart a recluse. He withdrew more and more from the outer world to the inner, and traversed the whole road from the empiricism of Condillac, through the physiological psychology of Cabanis and the semi-spiritual psychology of the Ideologists, to a definitely metaphysical view of the soul and a mystical pietism. The power of Maine de Biran's work was shown by the following which he had in the period immediately succeeding his death; it has been shown again less directly by the fact that while Taine and Ribot are regarded as the leaders of the empirical school, Bergson is the advocate of what would have been called in 1870 "Biranism." The empiricists speak as if French psychology plunged into a deep and dark tunnel just before it arrived at Biran's spiritualism, emerging into the light of day once more at the era of Taine. In any case there is here a clear distinction of aims and methods, and we may proceed to inquire separately into the development of these antithetic standpoints.

The reader of Taine's book, *On the Intelligence*, is conscious at the sight of the first page of some disturbing elements: he has been accustomed to hear about the sense organs, sensations, higher powers and so on in regular order; but this book seems to be curiously inverted and in addition to its disregard for standard divisions and headings it offers curious paradoxes culminating in the assertion that sensations are true hallucinations. All this requires some explanation which, fortunately, can easily be obtained. Taine is a peculiar combination of psychiatry and positivism. From the school of Condillac and Cabanis there had emerged Pinel, the man who first began to impress people with the fact that mental diseases were simply one kind of disease, not a wholly supernatural event but a form of human suffering to be treated as such. Pinel (1801) had a worthy successor in Esquirol, whose writings from 1817 onwards are regarded as the real foundation of the mental pathology and psychiatry of the nineteenth century. When the subject was properly established and the pathology in question was seen to be really a question of the mind and not to be satisfactorily treated by scourging, purgation, or sudden application of cold water, there was the usual zeal to collect examples, and the work of the scientific inquirer became the object of public curiosity. The abnormal became a popular topic before 1860, and it was the fashion to look on psychology as a storehouse of curious narratives: the ancient ally of metaphysics was reduced to supplying copy for sensational romances.

It was a just dispensation. While the psychologist in earlier days had been content with an abstract science, the writers of romance had kept alive the observation and description of human behaviour. Now, from that intermediary sphere of hospitals and asylums, from the places where society collects and segregates the products it cannot assimilate, there comes that application of method which alone could make the raw material of the novelist into a scientific product The gulf between sanity and insanity rapidly narrowed and the systematic study of mental pathology led to the idea of a distinction between normal and abnormal mental structures which was totally different from the current conception of madness or of idiocy From the new point of view not only did sanity and insanity merge their borders in the life of ordinary individuals, but the science of the normal mind, the ordinary psychology, was compelled to recognize as part of its domain what previously had been either excluded or unknown. To Esquirol was due the distinction of illusion from hallucination, together with a more careful elaboration of the significance of organic development as Cabanis had suggested it should be treated After Esquirol, Michea (1837), Baillarger (1842), and Brierre de Boismont (1845) continued the work of collecting material, studying and describing individual cases. At last a new and fruitful method of studying the operations of the mind seemed to have been discovered. The impact of the new influence on general psychology was expressed, with the exaggeration natural to the circumstances, in Taine's phrase, perception is *hallucination vraie*.

While it was natural that psychology should be most affected by the sciences which either bordered upon or actually shared its territory, there was a more general principle underlying the whole movement which may be regarded as the philosophical basis of the new empiricism. This was the positivism of Auguste Comte. In 1830 the *Philosophie Positive* announced that the world had passed through the age of religion and the age of metaphysics; it had now reached the age of science. The time was ripe for some such declaration and the Positive Philosophy counted among its admirers or adherents such widely different personalities as J. S. Mill, G. H. Lewes, Spencer and Taine. It was not necessary for the Comtist to accept Comte's doctrines as such: it was enough to sympathize with the general idea, and this was all that the disciples as a whole professed to do. That idea was positivism, not necessarily empiricism but the broad conception of fact as the basis of theory. That this should at once lead to a theory about facts and much discussion as to what were and were not facts, was only the nature of things reasserting itself against formulæ; without following the ramifications of Positivism we may note its relation to psychology. Comte himself disregarded the psychology which is based on introspection, a point on which Mill did not follow him. On the other hand Comte's objective mood was a strong stimulus to the study of social relations and social interaction. The two points taken together sum up the significance of Positivism or more strictly Comtism, for the science of mind; as Lewes formulated the psychology of Positivism it was a combination of biology, mental physiology, and sociology.

The discussion of Positivism leads at once from France to England, and then back again to France. The English writings were closely watched in Paris, where later the personality of J. S. Mill was known and honoured. Taine incorporated long passages from Mill in his own work, and between 1870 and 1875 great activity was shown in the translation of Bain and Spencer, Taine using his influence to recommend these works to the public. It has been said that France owes to Taine the importation of Stuart Mill and to Ribot the importation of Spencer.[1] Be that as it may, in 1870 France possessed an independent school of thought based on empirical principles in Taine and Ribot, while the school of Biran still diffused through its classroom an odour of metaphysics and Germany.

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[1] M. Mervoyer, *Étude sur l'Association des Idées* (1864), was one of the writers who introduced Bain and Spencer to France.

It is more important to understand Taine as a person than to criticize Taine as psychologist. There is no need to give any detailed description of his work, *On the Intelligence*. It was essentially a manifesto in which Taine did not so much write psychology as show how he would like to see it written. The contents, drawn from works of physiology, reports of asylums, and Mill's *Logic* have no inner unity and are decidedly entertaining. If they aspired to the dignity of a system there would still remain the fact that Taine never added the other promised volume on the emotions and the will, nor is it easy to see what he would have done with them if he had followed the indications of his treatment of intellect. In a similar suggestive but incomplete way Taine created a type of applied psychology in his *History of English Literature*, of which the monographs on La Fontaine and Livy were preliminary studies. Believing in the concrete rather than the abstract, Taine thought of this Folk-Psychology as the real sphere of applied psychology and deserves the credit of introducing to France this product of German thought. Popularity was Taine's nemesis; the public found his work original and entertaining, but failed to see in it any revolution which would usher in a new era of literary criticism based on psycho-physiological principles.

Much as he disliked the Metaphysical school, Taine never really worked out his own salvation; his empirics were closely akin to "Metempirics," and he aimed, more or less consciously, to exhibit the unity of mind as a plurality and then synthesise the plurality. A beginning was made from signs, presumably because they are indisputable realities; thence the author descends to images, to sensations, and to the elements of sensations. The last term denoted homogeneous, imperceptible elements corresponding to neural reflexes, a speculative basis which perhaps anticipated the neurograms of later writers. The return from these depths is made by a synthetic reconstruction of experience, decidedly not the most original part of the book.

Taine was the forerunner and herald of the era that began actually with Ribot. Born in 1839, Théodule Ribot began his professional career as a lecturer at the Sorbonne. In 1873 he published his book on *L'Hérédité Psychologique*, which Taine, among others, hailed as significant of new and better things. Ribot was in fact applying and extending the general spirit of English thought, and when the opportunity came he was naturally considered the right man to establish in France a school of experimental psychology. The opportunity did not come; it was made In 1888 the chair of Law of Nature and Law of Nations fell vacant at the Collège de France M Renan thought the time had come to recognize psychology as an independent subject, and proposed to convert this chair into a professorship of Experimental and Comparative Psychology. After some delay due to opposition the change was effected, M Ribot was installed, and psychologists everywhere applauded this sign of progress From then onwards M. Ribot continued his extensive labours He had given to his countrymen a historical account of English and German psychology in 1879, he had founded the Revue Philosophique in 1876 (the year in which Bain started *Mind*), and begun already that long series of monographs by which his name has become familiar to students all the world over

Physiology and pathology were the moving forces in France during the decade 1880 to 1890. Ribot did not estimate these forces very accurately; he allowed himself to be carried too far by the stream and gave too much importance to the idea that consciousness is an "epiphenomenon." This excess was modified in time and from 1888, the date of his work on *Attention*, Ribot became more truly psychological in his methods and outlook. The original animosity against metaphysicians, expressed almost violently in the early historical work, ceased to occupy the foreground, though the main principles remained unchanged.

In 1889 M. Liard, the Minister of Education who ratified the appointment of Ribot, established a laboratory for psychological work at the Sorbonne. To this was appointed as director Henri Beaunis, author in 1889 of a work on

Les Sensations internes. Beaunis was a physiologist first and foremost; his work was well fitted to rejoice and reassure all who longed to speed the parting metaphysics. But it was no longer a question of putting one doctrine in the place of another. The area was widening more and more; the different sciences began once more to diverge rather than encroach. In the sphere of mental pathology a new era dates from Pierre Janet's work; the physiological standpoint was at the same time more clearly defined by Richet, Grasset, and others A pure objective psychology was the programme of another group including Marillier, Paulhan, Godfernaux and Ruyssen.[1] Introspection was accepted as a fundamental part of psychological method by a third group, including Egger, Marion, Derepas, Dugas, and Malapert Tarde and Le Bon[2] followed psychology along the line of its connection with sociology In 1896 Recejac made an important contribution to the psychology of religion, while Delacroix in 1908 undertook a study of the history and psychology of mysticism.

Individuals may arrive at a monism which they find satisfactory, but the reduction of all the data to one category is rarely accepted by a whole nation or even a group of thinkers. In France at the close of the nineteenth century there survived in new forms the antagonisms with which the century began the empirical tendency was opposed by the idealistic critics The spirit of Maine de Biran lived again in Alfred Fouillée (1838–1912), and was expressed in two of his works, the *Evolutionnisme des Idées-forces* (1890) and the *Psychologie des Idées-forces* (1893). Fouillée begins with a general opposition to Spencer he would abandon all attempts to build a psychology out of "re-presentations"; in place of these *idées-reflets* we must put *idées-forces*. This programme emphasizes all that is dynamic the affective states are put first, and appetite (conatus) is the fundamental explanatory term. As a philosopher Fouillée puts the unity of life first, and by making life essentially activity, gravitated towards a voluntarism not unlike that of Schopenhauer. The intellect is not to be ignored; on the contrary, thinking is of prime importance as the last term in evolution, and this voluntarism is called by its author intellectualist None the less as a whole Fouillée's work was distinguished by the emphasis on activity, and was thus correctly accepted as an attempt to evade scientific determinism by employing biological rather than mechanical categories.

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[1] See p. 314: The works on character by Perez (1892), Ribot, Paulhan (1894) and Fouillée (1895) were characteristic of this movement toward "ethology."

[2] See p. 280.

A similar object is the main feature of Henri Bergson's psychology. Here, too, evolutionism is re-interpreted, and the argument is a counterstroke to the evolutionism then dominant Bergson's first work, *Essai sur les Données Immédiates de la Conscience* (Eng trans *Time and Free Will*) appeared in 1889 *Matière et Mémoire* followed in 1896. While later works, notably *l'Evolution Créatrice*, have given a more extensive statement of Bergson's philosophy, the main points of the psychology were stated in the first two One of these was the decided opposition to mental measurements, criticized by Bergson in a vigorous polemic which has become almost classic. The other was the doctrine which turns on the distinction of two memories.[1] The object of this distinction is to separate the habit of the organism from the pure act of memory. From Maine de Biran down to Bergson French thought is continuously exercised on this topic To emphasize habit is to reduce mental activity to cerebral physiology, as associationism had shown sufficiently. The new philosophy of M. Bergson is primarily a restoration of metaphysics, and is not so much a psychology as an influence reacting upon psychology. Some writers have welcomed it as a force likely to elevate psychology above the level of empiricism; others see in it only a useless regression from the light of facts and experiments to the darkness of unanalysable intuitions.

Such was the character and the distribution of the work done in France during the last decade of the nineteenth century. The group which still remains to be considered under the general title of experimental psychology can best be accounted for by tracing the work of Binet.

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[1] Cp. p. 217.

Alfred Binet was born in 1857, and died in 1911. When Taine wrote his earlier works Binet was still a boy; as a student he heard Charcot lecturing at La Salpetrière; he graduated when the English psychologists still formed the ideals of the French school and J. S. Mill especially was the dictator of scientific method. It is a curious fact that Binet never learned German and to a large extent seems to have been indifferent to the progress of psychology in Germany. His earliest works reflected the prevailing interests, e.g. the well-known study of *Animal Magnetism* (1886) (in collaboration with Féré) and of *The Psychic Life of Micro-organisms* (1887). A new direction of thought was foreshadowed in the *Psychologie du Raisonnement* (1886) and in 1892 the work on *Alterations of Personality* showed that its author was moving away from Associationism to a different conception of the psychic life. After collaborating for some time with Beaunis, Binet became assistant-director and finally director of the laboratory of the Sorbonne (1894). In 1895 the *Année Psychologique* began its career as the organ of Binet's school, and much of his work appeared annually in this periodical.[1]

Binet's work belongs historically to the age which followed the first epoch of experimentalism in France. The preliminary adjustments to the new outlook were achieved, and Binet really entered into an inheritance prepared by others. His reputation rests on the further progress made under his guidance. In Germany experimental work had tended to remain an appendage to physiology, an affair of nerves and reactions. Binet has the credit of moving on to comparatively new ground and attacking the intellectual life as a whole by experimental methods. The transitions which mark the different stages of Binet's career have an obvious logical sequence. Interested from the first in psychological phenomena as they are to be found in natural daily life, Binet carries the methodical principles of the laboratory into the street and the school. He constructs a bridge from the place of instruments and isolated problems over to the complex world of characters. His range was thus extended from his earliest studies on micro-organisms to the beginning in 1895 of Individual Psychology, which was then a new department. A more determined movement toward the understanding of minds as unities was then set on foot. The results were intended to be practically useful and were quickly developed in the sphere of pedagogy and legal testimony. The latter application resulted from a long study of memory and suggestibility (*La Suggestibilité*, 1900) which showed how the form of a question tends to determine the psychological reaction expressed in the answer; children particularly were found to fabricate answers, not by deliberate falsehood, but by the construction of "memories" and ideas which were due to the pressure put upon them by the fact of being questioned. The study of fatigue made by Binet and his pupil, Victor Henri, was an exhaustive research that has become classic (*La Fatigue intellectuelle*, 1898). This was intended to inaugurate a new experimental pedagogy, and the work was assiduously developed by studies carried out in schools. In 1905, with the assistance of MM Belot and Vaney, a laboratory for the study of pedagogical problems was founded. From the normal cases it was a short step to the abnormal In 1904 a commission was appointed to examine the status of the mentally defective in schools. The work was hampered by a general uncertainty as to the definition of the abnormal and the point at which a line could be drawn between the normal, the subnormal, and the abnormal Binet grasped the full extent of the problem and, having already made a comprehensive study of the different phases of intelligence, was able to construct a scheme of questions which could be used to test any given individual's powers. This scheme, known as the Binet-Simon scale because Simon collaborated in its production, must be regarded as a great achievement. The task was peculiarly difficult. It could only be accomplished by those who had behind their results an enormous mass of detailed research showing the order of development of the human faculties and the normal levels of intelligence at different ages. This "metric scale of intelligence" has been criticized often and certainly fails to be an exact measure,

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[1] For details and extensive list of writings, see the articles in *Année Psychologique*, 1912.

But none the less it works; it has been found of great use for its original purpose and more generally for the purposes of psychological clinics; and those who build better are ready to acknowledge it as the foundation on which they build.

§ 2. The last of the Anglo-French psychologists in Italy was Carlo Cattaneo (1801–69), who claims distinction as a student of collective psychology (*La psicologia delle menti associate*). In 1864 Bonatelli began to spread a form of Herbartian psychology (*Pensiero e conoscenza*, 1864, etc.). The positivist movement has been influential in Italy through Pietro Siciliani (1835–86), who has given psychology a biological and genetic tendency (*I prolegomeni alla moderna psicogenia*, 1878, *La nuova biologia*, 1885) In 1855 Panizza was making important contributions to cerebral localization, and the steady progress of Italian science supported the new movements in speculative thought In 1870 Roberto Ardigo published the manifesto of the positivists, *La psicologia come scienza positiva*, which again reflects the growing influence of physiology and in consequence tends to abandon the "unity" of the spiritualists in favour of that "plurality" which alone is compatible with the study of complex and variable functions Ardigo lays great emphasis on development as a fact of nature and as a principle of method. There is a general movement in the Universe from the indistinct to the distinct; in psychology this is a movement from sensation, as the primary indistinct level, to the differentiation and complexity of developed consciousness. Without favouring materialism, Ardigo casts his theory in the mould of evolutionary science and has obvious points of affinity with Comte, Spencer or Lewes, though he advocates a pure psychology as preferable to the type of inquiry cultivated by Sergi.

A more complete severance of psychological from philosophical inquiries is seen in the work of Giuseppe Sergi, Professor at the University of Rome. Sergi has been the leader of experimental psychology in Italy and has exerted a great influence both in the development of scientific research and in the direction of applied psychology. The psychology of crime began with Lombroso (*L'uomo delinquente*, 1876; last edition 1897–1900), while De Giovanni united medicine and anthropology. Sergi thought science might be utilized to prevent as well as to understand the development of criminals; he therefore promoted the anthropological study of childhood with a view to the creation of a scientific psychological method of educating not only the intellect but the entire mental and physical organism of the child. This idea is best known through the so-called Montessori method which is its practical outcome Sergi's complete adherence to the doctrine that mental phenomena are wholly dependent on physiological processes naturally suggests a parallel between his work and that of Maudsley in England or Richet in France (as Villa points out), while its development resembles the work done in France under Binet The physiological psychologist is necessarily not far removed from the physiologist who studies psychic affections, and Italy has produced in Angelo Mosso one of the best known exponents of this type of work. As Professor of Physiology at Turin Mosso has written books that have been translated into many languages, notably those on *Fear* (*La paura*, 1896) and *Fatigue* (*La fatica*, 1903). Other writers whose works carry us beyond the limits of the nineteenth century are Francesco de Sarlo, who represents the influence of Wundt and founded an Institute for Experimental Psychology at Florence (1889 *Concetto dell' Anima nella psychologia moderna*. 1903 *I dati dell' esperienza psichica*) and Sancte de Sanctis (1899, *I sogni*). The philosophical and critical aspects of psychology have been well represented in Italy, and there has been a remarkable output of works in the different departments of science which border on psychology, such as anthropology, criminology, and psychiatry. We shall have occasion to mention some of these later, and for the rest may refer the student to Villa's *Psicologia Contemporanea*.

§ 3. The psychology for which America has become famous is the work of the present generation. When William James was a student it had scarcely begun to exist, and his labours were carried on in the days when it was slowly attaining maturity. Before his time there were great names, but the monuments on which they are inscribed no longer attract much attention. Piety requires that the historian should go back to 1754 and recall the fame of Jonathan Edwards, champion of predestination, and other articles of the faith. From Edwards came a long line of earnest disputants, all primarily interested in theology or pedagogy, who argued and counter-argued with commendable zeal. The years of strife, beginning from 1777, made a break in the tradition, but the nineteenth century opened in the same manner. Locke was known to the earlier generation; Berkeley introduced his philosophy in person during his residence in Rhode Island; and, after an interval, the Scottish school of Reid, Dugald Stewart, and Brown began that career of domination which lasted down to 1890. The works of this genus show their character in their titles; they belong to the kind which introduces psychological material under the name of Mental Philosophy or Intellectual Philosophy or, simply, the Human Intellect.

Originality is the feature most conspicuous by its absence throughout this literary tradition The truth of this statement does not detract from the practical value of the treatises, it merely renders superfluous any detailed account of the various productions A more or less complete oblivion has now fallen upon such names as that of the Rev. H. P. Tappan, Professor of Intellectual and Moral Philosophy in New York, who attacked the work of Edwards in 1839, or that of Thomas C Upham, whose *Elements of Mental Philosophy* persisted from 1831 to 1848, and still lingers on the bookshelves of literary antiquarians. Upham was infinitesimally original and shone by comparison; he wrote a separate treatise on *Imperfect and Disordered Mental Action* (1840), which pointed to a less stereotyped activity than that of his contemporaries. An innovation of a different kind was made in 1844 by S. S Schmucker in a work entitled *Psychology or Elements of a New System of Mental Philosophy*. This work was based on conceptions more allied to the philosophy of Leibniz than to that of Reid; it received favourable notice from Beneke in his review of the state of psychology at that time, but neither Schmucker nor his work appears to have exerted any extensive influence. In this connexion it is of some interest to recall the fact that continental influences were at work in the decade of 1830 to 1840, and one of the most widely circulated books of that period was Henry's translation of Cousin's *Lectures on Locke* (New York, 1834), this heretical volume was used (unofficially) in Oxford as late as 1900!

Between New England and Scotland there has always been a close connexion Hamilton's works were reflected in the teaching of the American colleges almost as soon as they began to appear, and Hamilton never failed to inspire his followers with zeal and furnish them with an inexhaustible arsenal of quotations or historical references. Among those who showed distinctively the influence of Kant was Laurens P Hickok, author of a *Rational Psychology* (1848) and an *Empirical Psychology* (1854) James McCosh, who went from Belfast to earn at Princeton the reputation of a great educationist, was a voluminous writer with a considerable power of exposition, he wrote with facility on *Intuitions of the Mind, Inductively Investigated* (1860) and on the emotions, but his facility and his many occupations have combined to show that these factors do not produce the greater achievements in psychology

As at all times in all places, so in America at this time there was a natural convergence of medical, philosophical, and theological disputants in the direction of the new science of man Something must be credited to that able and energetic man, Benjamin Rush of Philadelphia, an eminent physician who brought to the study of the mind all those qualities which medical training develops and theological training usually atrophies James Rush, his son, wrote a work entitled, *A Brief Outline of an Analysis of the Human Intellect intended to rectify the Scholastic and Vulgar Perversions of the Natural Purpose and Method of Thinking by rejecting altogether the Theoretic Confusion, the Unmeaning Arrangement and the Indefinite Nomenclature of the Metaphysician* (2 vols., 1865). Before this trumpet blast the walls of philosophy might well have collapsed outright, but the teaching of James Rush was only a salutary infusion of physiology into the current theories which very slowly began to have a flavour of that "materialistic" science. But error was not the peculiar property of the philosophers, as may be seen by any one who reads the work of Martyn Paine, M.D. Beginning in 1849 with lectures on the *Soul and Instinct*, Paine was encouraged by success to enlarge this into a final treatise called *Physiology of the Soul and Instinct* (1872), which was to refute all materialism and establish finally the "substantive existence of soul." The author knew his ground thoroughly, and the work includes a great deal of (at that time) valuable exposition on the physiology of the nervous system and of operations due to the mind—e.g. nausea arising from disgust, contagious suggestion of yawning, and other such points. The work as a whole was marred by the unfortunate and hazy conception of "instinctive" action, a very transcendental operation which defies all attempts to connect it with the organism, and is a complete refutation of "materialism."

This was the age in which the descendants of the Puritan Fathers could no longer ignore the changes in the foundations on which their ancestors had builded. Huxley and Spencer were speaking; a less intolerable sort of writer was Bain; the abomination of uncleanness was the German materialism. For the psychologists all these tendencies were put together under the general head of "cerebralism." An exceptional service to American thought was rendered by Youmans, who championed the cause of Spencer in the days when England had scarcely begun to read or denounce the synthetic philosophy. Whatever its ultimate value, Spencerism has been epoch-making in every country at the time of its reception; it left a deep furrow between the old and the new after it passed through New York. The first era may be said to have ended with the massive work on *The Human Intellect*, by Noah Porter, sometime President of Yale (1871–77). Published in 1868, the book breathes a spirit of conciliation. It still retains the philosophic character of the eighteenth-century work, and comprehends psychological analysis, logical precepts, exhortation and metaphysics within the same covers. It exhibits an unusual respect for history, the afterglow of Hamilton's cosmic erudition, and is throughout a conscientious statement of the whole range of mental philosophy. The activism of the Herbartians seems to accord best with the author's religious presuppositions, and he gives the preference to such views as were, broadly speaking, "spiritualistic" But he rises much above the level of earlier theories, encumbered as they usually were with irrelevant theological or ethical purposes, and if the total result is somewhat vague in its eclecticism, that is due more to a lack of definite co-ordination between the different aspects of the problem than to any vicious prejudices As a critical compendium this book flourished for a quarter of a century, was separately printed in England as late as 1880, and is still known and quoted

From 1867 the *Journal of Speculative Philosophy* began to appear. Though it was in no sense a psychological journal, it contributed very largely to the development of European influences among American readers W. T Harris, the founder of that journal, was himself a philosopher who organized education, and he lost no opportunity of advancing general interest in the philosophical and psychological aspects of pedagogy The German influence began to grow more and more extensive, to Kant and Hegel was added Lotze, and we may reckon next after the Scotch-Kantian period that which depended most on Lotze. In general this period was marked by the decline of intellectualism, the new emphasis on feelings, and a general reconstruction of schemes and formulæ for the exposition of psychological material

The proclamation of a new era was definitely made by Professor John Dewey (at that time attached to Michigan University) by his *Psychology* (1886) The work was not pretentious, but it had great significance, it was not large, but it contained much. It was prefaced with the statement that the author would endeavour "to avoid all material not strictly psychological" and "to reflect the investigations of scientific specialists in this branch" On the other hand, philosophy met with no bitter acrimony, and there was less opposition to the Kant-Hamilton-Porter development than some other psychologists were hoping to see. A detailed analysis of the book is not required, but a few distinctive features may be noted. There is no introduction on the soul nor any attempt to maintain Porter's statement that psychology is the science of the soul; psychology is defined as the science of the facts or phenomena of self, and of the self we learn that it "is only as it acts or reacts." The groundwork is further elaborated by distinguishing knowledge as universal element from feeling as individual factor and placing the unity of these two in the will The chapters on the senses fulfil the promise to reflect scientific investigation, being based on the work done in Germany by Helmholtz and others; knowledge is pre-eminently the attainment of significance, and apperception is given the place of honour, association, dissociation, and attention are aspects of this relating activity. After this study of the *material* and the *process* of knowledge come the stages (perception, memory, imagination, thinking) which are stages toward complete unification and systematic organization of the material; the final stage is intuition, not the specific intuitions of the eighteenth century, but the Hegelian unity in plurality presented (after Plato and Spinoza) as a psychological last state of the ideal mind A second part contains the doctrine of feeling and will of which the keynote is the idea of the self as penetrated by more or less dominant feelings, reacting to external stimuli in accordance with such moods or dispositions, and finally acquiring a "will" through the organization of experiences (cognitive and affective) into a distinctive personality.

The new tone which can be heard in the language of this book is largely produced by a philosophical estimate of psychology, namely, the belief that mental action is one of the functions of the individual, in place of the idea that the individual has in the mind an "inner light" for the reflective illumination of immutable truths, there is here the conception of activity which subtly combines Lotze and Spencer. Psychology, we are given to understand, is a science not because it is an analytical treatment of a fixed quantity (the soul), but because it succeeds in classifying and naming types of action. In other words, the formalism which lurked almost undetected in the old belief that mathematics was the one and only real science here disappears, just because that type of analysis is not attempted and the whole subject is allowed to exhibit its natural affinity with biology or morphology. Through being in this sense abreast of its times and to some extent ahead of them, through being in fact the first grey dawn of that to-morrow for which the psychology of the American colleges was waiting, this textbook has seemed to claim a special notice in a historical narrative. Since those days Professor Dewey has continued to make history, and this is not in any sense an account of his teaching as a whole; it is enough to say that he is now regarded as the leader of a definite "school,"[1] and that the so-called "functional" psychology (an application of instrumentalism to the field of psychology) is to be considered as the outcome of the thoughts which were partly expressed in the book here described.

The last phase in the evolution of American psychological work was the adoption of experimental methods. Authors like Kant and Lotze exert their influence where they are read, a laboratory, like Mecca, must be visited in person. When the laboratory was opened at Leipzig in 1879 Wundt had more than one representative from America in his earliest groups. James McKeen Cattell was assistant to Wundt in 1880, and his reports in *Mind* (1881) were the first statements of the new procedure which were published for English and American readers. Since then many others have learned their science from Wundt or pupils of Wundt, and themselves in turn become masters of other pupils. To-day, America is most widely known for two assets, experimental psychology and William James.

Of all the scientific works ever produced James's *Principles of Psychology* is most deserving to be called a "phenomenon." Though it did not appear until 1890, there had been preliminary instalments in periodicals, and many were anticipating eagerly the final publication. Its coming produced mixed feelings. There is a reassuring dignity about the march of systems; they tide themselves over the awkward places by sheer force of superiority; but already James had begun his opposition to systems and was determined to be systematically erratic. He announces that "the reader will in vain seek for any closed system in the book; it is mainly a mass of descriptive details, running out into queries which only a metaphysics alive to the weight of her task can hope successfully to deal with." Something may be allowed for the difference between a "system" and a "closed system" but no consistent thinking ever yet avoided the necessity of coherence and no one feels shocked at a reference to James's "system of psychology." We hear a more intimate confession when the author "rejects both the associationist and the spiritualist theories," and says "in this strictly positivistic point of view consists the only feature of it for which I feel tempted to claim originality." One reviewer described the author as an "impressionist." An instructive parallel might be drawn between Taine and James, not only in respect of their qualities as writers and the character of their interest in human life, but also as the two prominent exponents of anti-rationalistic methods. It is true that Taine was not fully emancipated, but it is also true that James was enslaved by excess of liberty.

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[1] Including J. R. Angell and King

For those who have not read all or part of the *Principles of Psychology*, a description of its rubrics would be worse than useless; those who have read it know why such a proceeding is to be avoided. The author was primarily a man with medical training; his official positions were so many stations on the road from body to spirit. Born in 1842, James graduated in medicine at Harvard in 1870, became an instructor in physiology at Harvard, and later Assistant Professor of Comparative Anatomy and Physiology. In 1879–80 he migrated from physiology to philosophy, and remained in that department till 1889, when he became Professor of Psychology (1889 to 1897); from 1897 to 1907 he was again officially Professor of Philosophy, retiring after that date from teaching in order to devote himself wholly to writing. At the end this psychologist was a philosopher, but the change was nominal; James himself did not change, and he was so far indifferent to formal distinctions as to be scarcely aware whether he was treating psychology philosophically or philosophy psychologically Thus we are compelled to travel from the *Principles* to the *Pragmatism*, because, though not concerned here with philosophy, there is no dividing line at which one may reasonably stop

Compared with the earlier American writers James had distinct advantages His intimate and practical acquaintance with the sciences of physiology and biology placed him in a position from which he could survey human action as a system of natural adjustment Other factors of temperament and genius prevented him from dropping into a crass materialism The result was a distinctively physiological psychology which claimed to be a statement of what actually happens in the course of one's conscious life To avoid preliminary errors such as the atomistic "elements" which make consciousness, and also to avoid fallacies due to pre-conceptions about the nature and purpose of life, a plunge into the "stream of consciousness" must be made at the very beginning This conception of life as the mere fact of living and of consciousness as the mere fact of being conscious is the means by which James struggled to get ever closer to reality Introspection, with an almost mystical belief in the possibility of fusing what one knows and what one is, was the chief instrument, but its use was somewhat obscured by the elaborate physiological supplements James did not belong to those who think all mental phenomena are "epiphenomena" and therefore fully explained by pure "cerebralism" On the other hand, he seems to have been deeply impressed with Lotze's teaching about the difference between "knowing" and "knowing about" any phase of reality. In a certain way one only knows vision by seeing, but sciences are not immediate experiences, and a chapter on vision must describe the eye and its functions simply because the greater knowledge toward which men strive is attained by this particular circumnavigation The reason why thoughts are explained with the help of physiological diagrams is that actual experience has no other way of rounding off its own development. To say that physiology throws no light on mental processes is very true; the fundamental error is in asking physiology to explain something which has previously been made inaccessible, instead of taking all facts as capable in some degree of being explained by all others.

As regards the introspection James was also able to point out where this method had been vitiated. The "psychologist's fallacy" is the counterpart of the physiologist's fallacy. The latter sees in the brain both the organ which sustains consciousness and the consciousness which (after being separately recognized) is "located" in that organ. The psychologist, having isolated an "idea" as idea of something, proceeds to find in the original idea all the factors of which he is afterwards reflectively conscious. Hence the tendency to talk of "parts" of an idea, as if a person's idea of a year contained 365 days, or his idea of a table had four legs. Introspection has often been condemned on this ground. Kant rejected it as being a perversion of true observation, since the object observed was altered by the observing There is undoubtedly little chance of analysing a fit of anger while it lasts But how do we get at anything? Space separates us from objects; time separates us from our past experiences. These are the conditions of all knowledge which have to be accepted. Some say "we can never know ourselves" others complain that we can never know anything but ourselves. All this was for James essentially a talking about how to begin, instead of beginning—or rather instead of recognizing that one had already begun.

The *Principles,* not being a system, might be described as a critical survey of the possibilities of psychology. If James had no system, he had decided preferences, and a wealth of vituperative adjectives for all who came and were not chosen. The advantages of a non-scientific language are very limited; it is often difficult to guess the exact bearings of what is said upon what has been said, for James is given to translating instead of quoting the other employers of the Anglo-Saxon tongue. A readiness to let the reader "drop the phrase" if he disliked it was no special advantage, and allowed many readers to think they agreed when they were only failing to discern their disagreement. But this is detail. The letter perishes, but the spirit lives. James was more subtle, more difficult to comprehend than most readers have thought. Particularly in his psychology, overshadowed as it is by an emotional passion for intuitive spontaneity, he becomes elusive. He talks physiology without intending to "explain" consciousness, but only to make it more intelligible; he recognizes the machinery of association and the value of "paths" in the brain, but warns the reader that this is subsidiary to the unitary "flow of consciousness"; he believes emotion is nothing without the physical states usually regarded as merely "accompanying it," but does not mean that the strictly emotional part of the emotion (its felt significance, its inwardness) is really physical or physiological; the will he clearly regards as something to be talked round.

When all is said and done James remains the eminently readable psychologist. The interest which expressed itself in the *Principles* was not, strictly speaking, an interest in the mind, but an interest in men. Time only deepened that tendency. As a reviewer James was always prejudiced against any book that was "dull"; he seems always on the verge of dropping all the emoluments of professorship and openly declaring that no one really explains anything; like the centipedes, we manage our instruments of progression best when we theorize least. In his later works James shows an increasing tendency to develop the "voluntaristic philosophy." In 1884 he had founded the American Society for Psychical Research. In 1886 he was much impressed with the ideals of subconsciousness, and at a later date declared

"I cannot but think that the most important step forward that has occurred in psychology since I have been a student of that science is the discovery, first made in 1886, that, in certain subjects at least, there is not only the consciousness of the ordinary field with its visual centre and margin, but an addition thereto in the shape of a set of memories, thoughts, and feelings which are extra-marginal and outside the primary consciousness altogether, but yet must be classed as conscious facts of some sort, able to reveal their presence by unmistakable signs I call this the most important step forward because, unlike the other advances which psychology has made, this discovery has revealed to us an entirely unsuspected peculiarity in the constitution of human nature No other step forward which psychology has made can proffer any such claim as this." (James, *Varieties*, p 233 See Binet, *Alterations of Personality*)

Though never mawkish, James was decidedly mystical, as perhaps every champion of the will to believe and every defender of an irreducible something called personality, must be mystical Analysis is not compatible with that mood; it finds satisfaction in the contemplative study of unities, and with James it came to fruition in the study of experiences. The title of his Gifford Lectures, *Varieties of Religious Experience*, contains the two keywords of all his later thinking, variety and experience

Here the psychologist and the philosopher were but two parts acted by one man The psychologist named the varieties, studying them with the eye of a man used to diagnosis. The philosopher saw in experience a name for the total psychological process, life as a cosmic process being the sum of varieties and spontaneous expressions of power, whether considered widely as in biology or more specifically as in psychology James made this study a great success because in it he had scope for the expansion of the idea expressed in the *Principles* "Once admit that the passing and evanescent (mental states, i e) are as real parts of the stream as the distinct and comparatively abiding; once allow that fringes and halos, . . premonitions, awarenesses of direction, are thoughts *sui generis*, as much as articulate imaginings and proportions are; once restore, I say, the vague to its psychological rights, and the matter presents no further difficulty." This was the real core of all the work James did. Around it grew his "voluntarism," his regard for "fringes" and "transitive states," his dislike of associationism (as he stated it) and tendency to repudiate all analysis in order to keep unmarred the whole vitality of consciousness. This was the quality which ultimately made James appear so much at one with Bergson's *élan vitale*.

Lastly we come to experimental psychology, and here I cannot do better than quote the words of one who has been long familiar with the literature and laboratory work of the American colleges[1] "Probably the earliest attempt at exact demonstration in psychology in America occurred at Harvard University Professor James has said that it was either in 1875 or 1876. But the first laboratory for psychological demonstration and research was opened in 1883 by Dr. Stanley Hall, during his incumbency as Professor of Psychology and Pedagogy in the Johns Hopkins University[2] Four years later *The American Journal of Psychology* was founded by Dr Hall, and the *Elements of Physiological Psychology* was published by Professor Ladd of Yale University In 1888 Professor J McKeen Cattell occupied the first chair in America created for psychology alone, having a laboratory attached, at the University of Pennsylvania The pedagogical adaptation of the science advanced still further in a very decisive manner when Professor E C Sanford began the publication of his valuable *Laboratory Course in Physiological Psychology* (1891) This publication was intimately connected with the activity in psychology at Clark University which had been opened in 1889, to the presidency of which Dr Hall had been called in 1888" Reference is made elsewhere (p 297) to Dr Hall's work in educational psychology, here it is only necessary to add that among his many activities not the least important and effective has been the creation of the American Psychological Association President Hall and Dr J M Cattell were Wundt's first American pupils, and from their efforts begins the record of laboratory work in America. Since then there has been, as one writer happily phrases it, "great lateral extension", in 1894 twenty-seven laboratories were described by Delabarre, and in 1912 the number had risen nearly to forty

[For details consult *Am J Ps*, 1912, xxiii 517 "The

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[1] E F. Buchner, *Am J. Ps.*, 1903, p. 411 The original is reproduced with slight alterations

[2] This was afterwards transferred to Clark University.

History and Status of Psychology in the United States," C. A. Ruckmich, with reference to *L'Année Psychologique*, i. 1894. Among the names not found in the passage quoted above one naturally recalls Cattell's successor at Pennsylvania, L. Witmer, J. M Baldwin, whose earlier work was done in Toronto and Princeton (*vide* p. 297); Jastrow, at Wisconsin; Münsterberg, Royce and R. MacDougal, at Harvard, E W. Scripture at Yale, J. R. Angell at Chicago; C. H. Judd, G M Stratton, and many more who are still making history Under E B Titchener the laboratory at Cornell has long enjoyed distinction, and Professor Titchener's many works have provided generations of instructors and students with indispensable instruments for their work.]

A GEOGRAPHICAL SURVEY

In the seventeenth and eighteenth centuries Western culture was primarily the culture of the European continent This history has already shown how far that culture began in Greece, and was perpetuated in the Alexandrian, Roman, and Arab Empires From Plato to Thomas Aquinas there was a period of diffusion which then gave place to a period of contraction, so that, broadly speaking, the fourteenth century provided nothing to record outside the range of the University of Paris and minor contemporary centres of learning indirectly illuminated by it We have seen that in some degree there was a British school as far back as the time of John of Salisbury, but only a narrow pedantry would claim any effective independence of thought for individual nations before the close of the eighteenth century. Descartes was French and Leibniz was German, but neither of these can appear to the historian as other than "continental" in character. As a matter of method it has not seemed desirable to emphasize locality or nationality before dealing with those lines of thought which run continuously into the nineteenth century, but in this later period with its bewildering mass of detail no more convenient principle of division is available. A natural evolution has led us to treat of German, British, French, Italian and American schools. In the interests of completeness some indication must be given of the fact that other countries have made and are making contributions to the common fund of knowledge, but the reader is warned that this part of the work is limited to indications and makes no ambitious claim to be a complete statement of authors or writings.

Scientific traditions are to some extent dependent upon such natural conditions as place and language Denmark presents itself as most closely allied to Germany in both these points, and the scientific works most widely known are those which appear in the German language Among the earlier writers F C Sibbern's *Psychology* (1819) was influenced by Schelling. it reached a fourth edition in 1862. Harald Hoffding, Professor at Copenhagen, is well known in many countries for philosophical and psychological writings The *Outlines of Psychology* is a book that has been long known to students; and this English version was made from the German edition of 1893 (first German ed 1887) This transmission through the German language has been a factor in making critics assume too readily that Hoffding's chief inspiration was derived from Germany The qualities of Hoffding's work are largely due to his extensive acquaintance with the history of philosophy and science A large history of modern philosophy, a monograph on English philosophy, and other writings testify to this The character of the result in psychology is well shown by the fact that while British writers see in Hoffding mainly the German doctrine of unity, Wundt regards him as an associationist On this point we have the advantage of being able to give Hoffding's own statement (*Hist of Phil*, ii 590) He declares that he attempted to make the uniting principle his central point of view, and to show how the laws of association, as well as those of sensation, can be traced back to this principle. In fact, the basis is really Kant's idea of synthetic unity, but Hoffding was to the German mind heterodox in his belief that apperception would not help to explain the unity On the other hand, a divergence from the earlier British mode of thought is seen in the statement that this unity cannot be equivalent to a sum of elements, but (as Wundt was arguing) must be a "creative synthesis." For Hoffding psychology is one of the fields in which arises the "qualitative" problem, the problem of an "irrational" relation between the totality of elements and the resulting qualitative unity

Though well acquainted with the experimental work that was being done at the time, Hoffding very obviously inclines toward the sphere in which that work was least effective and the older philosophical writers were still the guides. The space devoted to physiology and to the senses is relatively small: what is said on these phases of the subject comes under general headings, such as Mind and Body, the Conscious and the Unconscious. The main divisions of the book are on Cognition, Feeling, and Will; these are not only an able and learned statement of the accepted facts but also a formulation of a principle, namely, the view that each division is complementary to the others. The distinguishing feature of the whole work consists in the fact that its doctrine of unity is not only asserted, but so maintained as to result in a unity of exposition. The genetic, the analytic, and the synthetic (considerations of the total life and the social relations) phases of psychology are here considered in a way that raises this book, though small, far above the level of a mere textbook.

Another Danish writer is Alfred Lehmann, who wrote in 1892 *Die Hauptgesetze des menschlichen Gefühlsleben*, and has continued to publish works on psychology, one of these being *Elemente der Psychodynamik* (1905). In the years 1889 and 1890 academic psychologists were entertained by a discussion between these two Danish writers on the nature of Recognition and Memory. Höffding argued that immediate recognition involved a quality of familiarity but no association, while Lehmann insisted that familiarity, reduced to "increased facility of disposition" in the course of the discussion, could not contribute a distinct psychic quality; he inferred the necessity of some association. The point was fundamental for the two disputants because it marked a divergence of theory; Lehmann was (and is) as much inclined to favour the psycho-physical standpoint as Höffding was to minimize its importance.

In Scandinavia interest is turned chiefly toward the practical use of psychology. In Norway Anathon Aall and K. B. Aars, both of Christiania, have done experimental work. In Sweden, Efraim Liljeqvist and Larsson (Lund) have contributed to the subject of sensation. From Upsala come works on the senses and the emotions by Sidney Alrutz.

In Belgium at the beginning of this century the activity in psychological work was considerable. At Louvain both experimental and critical work was being carried on; among individual writers J. J. van Biervliet (Gand) wrote on Memory (1893), and on Quantitative Psychology (1907); others co-operated in furthering the progress of social and educational psychology.

In Switzerland experimental psychology has flourished at Geneva where Éd. Claparède (editor of *Archives de Psychologie*) and Th Flournoy are teachers of repute; at Zurich the psychoanalytic work of Bleuler and Jung continues to develop and attract attention

In Austria the followers of Brentano have become a definite school Franz Brentano (b 1838) was at one time a Professor in Vienna His chief psychological work, *Psychologie vom empirischen Standpunkte* (1874), never went beyond the first part, but even this fragment has been of considerable importance (*vide* p 190) From it has sprung a distinct line of thought represented primarily by the works of Meinong Born at Lemberg in 1853, Meinong became Professor in Graz and founded the first Institute for Psychology in Austria (1894) Meinong has passed from psychology to a particular kind of logical research, but continues to deal largely in the criticism of psychological methods and the significance for psychology of his own "theory of the object" (Gegenstandstheorie) Stephan Witasek, also Professor in Graz, was a pupil of Meinong, who made many valuable contributions to experimental psychology and pædagogy He co-operated with Alois Hofler, Professor in Vienna (b 1853) Hofler, after collaborating with Meinong in a *Logik* (1890), wrote a *Psychologie* in 1897, and has continued to write on both subjects To this group belongs Edward Martinak, he has written on the psychology of speech (1898) and other topics

In Russia the philosophical sciences appear to have begun their career with the foundation of the University of Moscow in 1755. German and French influences prevailed in accordance with the trend of political sympathies, but very little was attempted until the latter part of the nineteenth century Psychology has had a still briefer career In 1885 there was at Moscow a Psychological Society, founded by Professor Troitsky, from it sprang the periodical *Voprossy filossofi i psychologuii*, started by Nikolaus Grot (1852–1899), who was second president of the society and author of a work on the feelings The word "psychology" is here used to cover a multitude of notions, and denotes chiefly metaphysical and literary discussions, but there has also been a strong empirical tendency. Matvei Troitsky (1835–1899), Professor at Moscow, was a declared opponent of transcendentalism and the "metaphysical" psychology, he wrote several works of which the most influential was a critical history of modern thought, (*German Psychology*, 2 vols). Grot also at one time favoured the purely empirical view of psychology and wrote on psychophysiological topics; his work on psychic energy attracted some notice.

Between these earlier writers and the latest exponents of psychology there comes an intermediate group which supports (with justification!) the case against "cerebralism." The writings of Lopatine (*Mémoire parallélique de la Vie et de l'Âme*, etc.), and of Troubetskoi are to be reckoned in this class. The most recent phase of psychology is represented by the experimental work done in the laboratory at Moscow under Tokarsky. Here the work definitely reproduces the manner and interests of the Leipzig School. This psycho-physical line of development does not flourish so well as the psycho-physiological. In the latter Setschenow began in 1863 to establish the view that simple physiological processes (reflex action, the reactions of animals) must be taken as the basis of psychology. This view has been consistently maintained by Pawlow in his study of conditioned reflexes by the "salivary secretion method," and is most fully developed in the work of Bechterew who comes from the publication of many important neurological works to an explicit statement of an "Objective Psychology." Experimental work also owes much to Sikorsky (Kiev) and Orchansky (Charkov).

In the East a subject so modern as experimental psychology is found only where Western influences have penetrated. In Japan as far back as 1874 some American writers (e.g. Haven) had been introduced, and the Japanese mind was being nourished with that diluted form of Scotch common sense. At a later date Spencer was in the ascendant. Finally, Wundt and the German writers occupied the field. Some good work has been done by Japanese students, but in such close dependence on Western institutions that it cannot yet be regarded as a distinctive achievement. This is equally true of China, India, and for similar reasons South America, where the Latin influences are producing work of local importance.

CHAPTER VI

THE SCOPE OF MODERN PSYCHOLOGY

§ 1. The field of psychology may conveniently be divided under the heads of general and departmental psychology. By general psychology is meant the study of mental processes in normal human beings. It is distinguished from the special departments which can be marked off by specific titles, such as social, animal, abnormal and the like.

The great systems of psychology, which make up the history of the subject before the nineteenth century, are for the most part concerned with general psychology; memory, attention, association and other similar topics are given the place of honour. With the advent of experimental methods the focus of interest was shifted: the senses were most closely studied But it is not correct to speak of "experimental psychology" as a separate department distinctions of method must not be confused with distinctions of subject-matter or sphere. Experimental psychology has been designated "theoretical psychology of the laboratory" (Titchener), and this phrase serves to emphasize the limits within which we may apply the word "experimental." Distinguishing in this way method and scope, we shall now indicate the progress of method and then summarize the work which falls under the specific departments.

Occasional vague suggestions of experimental methods occur at different points in the history of psychology, but the first definite attempts belong exclusively to the nineteenth century. Fechner's ideas were the roots from which the final growth developed, though in some sense Weber's work might be regarded as a true antecedent, just as Bessel's observations were the antecedents of time-measurements. But the year 1879, the year in which Wundt's laboratory was started, was the practical climax of the movements by which "philosophical" psychology became separated from "scientific" psychology. Then began the "new psychology" of the nineteenth century. Its adherents were inclined to forget that this was not the first "new" psychology, and that it might not be the last. In spite of courteous phrases it is obvious from the literature of the period that the followers of the new school felt acutely their superiority over all previous psychologists, while those who had been trained to take psychology as a philosophical discipline were content to regard the whole proceeding as an interesting development of physiology, some entrenched themselves in dialectical distinctions, others were openly petulant Here we shall be concerned only with the movements which took place within the circle of its supporters.

In the first decade after 1879 the new movement had spread and become so far established that laboratories existed at Berlin, Bonn and Gottingen in Germany, at Johns Hopkins in America, at Cambridge in England, and at Copenhagen in Denmark. From 1882 the *Philosophische Studien* were published and became a treasury of the results obtained at Leipzig The subdivisions of the work were principally (1) the analysis and measurement of sensation; (2) the measurement of the duration of psychic processes (psychometry), (3) studies in the time-sense, in which the problem is to determine how far apart in time the stimuli must be in order to produce distinguishable effects and not result in fusion; (4) studies in the processes called attention, memory and association, these formed at that time the upper limit of application for the new methods. The principal methods employed were experiment and the *questionnaire*; the former is properly a general name for observation conducted under specially prepared conditions which admit of control and variation. Both the subdivisions and the methods exhibit obvious differences and have been subjects of dispute: some of the subdivisions are more physiological than psychological; of the methods, the *questionnaire* is the least precise in application. In experimental work there is a practical and a theoretical element. The practical element consists in the use of apparatus, its invention, construction and application. It is now necessary for an experimental psychologist to have adequate knowledge of many complicated instruments in order to carry on his researches, and this phase of the work has a history of its own Helmholtz was one of the most practical men of his time, and possessed an extraordinary gift for devising instruments. The theoretical element consists in the formulation of laws and hypotheses, a work which many psychologists regard as still necessarily insecure if not entirely premature. The first (practical) aspect can only be studied in works which give diagrams and explanations of the apparatus, the second has some points which belong to the more vital questions of psychology, and so far enter into its history that they claim at least a brief survey.

(*a*) While the results of experiment might be regarded as still inadequate for the establishment of laws, it is possible to raise the question whether experimental psychology does not rest upon a working hypothesis of which the truth or falsity must be a persistent factor in all the actual researches. This question has been a spectre in the halls of psychology ever since Fechner's day. It is, in brief, the question whether experimental work is not fundamentally a matter of quantity, whether quantity is really ever given in the sphere of psychology, and whether, if it is not, there is anything except illusion and physiology in the "new psychology" It is possible to ignore this problem and to assert, by ignoring it, that experiments reveal what they reveal, that the knowledge gained is valuable whatever may be the "ultimate implications." But the new psychology has, in fact, shown great concern about its foundations and has reviewed its own status more than once. The results have been a variety of answers to the question What is measurement in psychology?

Fechner's view, that it is possible to measure psychic intensity by correlating the objective stimulus and the subjective process, was quickly seen to be a thing of naught. Wundt was one of the first to propose another view. If the physical and the psychical are parallel series (A, B, C; *a*, *b*, *c*) that which is immediately known will be the series of psychic events *a*, *b*, *c*, and that which is measurable will be the relations between *a*, *b* and *c*. There is, then, no absolute unit of measurement; all that can be measured is the relation as it is experienced, and all that can result is a knowledge of the fact that under the given conditions *c* is more or less than *b*, *b* more or less than *a*. But even so the question may arise whether more and less are here used correctly; whether, in fact, the difference between *c* and *b* is not a difference of quality in so far as it is properly and strictly psychological. Wundt deserves credit for his intentions to avoid Fechner's metaphysical position and make the matter purely psychological. But not only was the unit of measurement here abandoned, but also a transition was made to judgment of differences. In consequence of this it became doubtful whether measurement was measurement of differences in sensation or of the power to judge differences, the latter element coming in as a natural result of Wundt's belief that nothing can be said about a sensation before it has been apperceived.

The psycho-physical method, as understood in the school of Wundt, is in reality quite divorced from the original Weber-Fechner doctrine. Thus Kulpe can say "it is not too much to say that psychology has given her final verdict in the case of Fechner's law"; also, "Weber's law is the law of a relation between stimulus and judgment, and not of one between stimulus and reactive movement" (*Outline*, Eng. trans, p. 168). Wundt briefly remarks that Fechner's position rested on a view of the relation between mind and body no longer tenable. For his own part Wundt maintains that there are psychic qualities and that they can be measured. The general concept under which this process comes is that of relation: the relating function is connected with comparing, which is equivalent to establishing definite points of agreement or difference. Even the sensations and simple feelings, that is to say the elements, may be compared, and this means that they can be related one to another in respect of quality, intensity and clearness. Since things which are compared must also be distinguished, and each distinct item must be something marked off from other items, the conclusion is that "every psychical element and every psychical compound, in so far as it is a member of a regular system, constitutes a 'psychical magnitude.'" The magnitude is given, but the value is only determined by apperception. Thus, if we take the case of two objects having weight, one being equivalent to a pound and the other to two pounds, the sensations experienced in lifting them will be magnitudes which are different because the objects lifted are different, but the value of the difference will be determined by a judgment which expresses consciousness of the relations between the experiences, not the objects We cannot assume that the sensation given by a weight of two pounds is double that given by a weight of one pound, we can only make trial and discover what the result in terms of experience usually is. The scope of experiment in this sphere of measurement is very much limited by Wundt · we are only able to say when there is no perceptible difference, or when there is a just perceptible difference between magnitudes, or when there is no difference between differences (i.e. when *a* differs from *b* exactly as *b* differs from *c*) The first and third of these, it may be noticed, are negative the second is a recognition of difference which implies a certain divergence between experiences, but no definite multiplication of a unit such as would be given in a statement that experience *b* is twice *a*. The question still unanswered is whether in all this systematization anything is actually attained, or whether the "general law of relativity" is not an elaborate way of saying that our experiences exhibit differences which are never in any proper sense of the term "magnitudes."

That this is a real difficulty is shown by the efforts made to overcome it Thus Stumpf, realizing that one experience seems to be nearer to a second than to a third, proposed to take the distance between them, in respect of quality or intensity, as the basis of measurement. Foucault hoped to avoid the problem of measuring intensity by taking clearness as the sole characteristic which is equivalent to differences and then utilizing the methods of measurement to give definite relations between degrees of clearness. Stumpf failed to show how the "distance" as a psychical datum could be treated without going straight back to the objects and so rendering the measurement really physical. Foucault relied upon the vitality of the idea to give it clearness and relative position, but this, too, has appeared, in spite of the ability with which it was maintained, to be actually a complex of metaphors. In the meanwhile other parties entered the field and assisted in proclaiming the failure of all measurement. The idealists, led by Bergson and ably seconded by Aliotta, argued that "intensity" was a word used to bridge the gulf between the external plurality (things in space and time) and the internal unity which is not capable of being spread out or dismembered in the same way; that intensity is therefore not really a magnitude in any sense nor in any sense capable of being measured.

The idealistic attack on "mental measurement" does not really go beyond the standpoint of Fechner's opponents (e g von Kries) It seems to lose significance when viewed from the standpoint of practice, for its principles could be applied universally, and so make impossible any kind of measurement But while criticism of this type may open up new vistas for thought, it has neither the right nor the power to obstruct processes which science can use empirically. For this reason psychologists are justified in regarding the intuitionists and idealists as providing more inspiration than nourishment, but they cannot ignore the fact that their own position is unsatisfactory This is especially evident when, after Wundt's confident exposition, we turn to Ebbinghaus Here we find Fechner's psycho-physic rejected as completely as by Wundt, but the measurement of intensity is also given up, and the "psychological" gives place to the "physiological" interpretation of Weber's Law. Ebbinghaus grants, what Kulpe claims, that the "psychological" interpretation does not exclude the physiological, for Wundt's apperception is by him assigned to a definite cortical area, and the apperceptive judgment might express the interaction between apperceptive and perceptive neural processes. But while the empirical value of measurement formulæ may be granted, this involves a function which no one pretends to measure and a centre which no one cares to regard as more than a vague hypothesis. Ebbinghaus judges that this view is "possible, but at present hardly probable." Similarly other writers have postulated unconscious elements to explain the fact that the sensations and the stimuli do not correspond point for point. If the stimulus must increase from a given value x to another value y, and between x and y there are physical increments not represented by psychological changes, the "gaps" which thus appear to be demonstrated as occurring in our mental life call for some explanation The unconscious is here brought in as a working hypothesis by Lipps and others, while the alternative of physiological summation is equally available. These points arise at the limits of human knowledge and remain problematic.

(*b*) Psychometry, or the measurement of the time-relations of the senses, has an instructive history It began in 1795 when the British Astronomer Royal (Maskelyne) found that his assistant was making records different from his own. The difference was regarded as a simple error on the assistant's part, but later, in 1820, Bessel, also an astronomer, found that a similar difference existed in the records of several astronomers As the act of observing a star and timing its transit involves more than one sense, an inquiry into the cause of this difference led to a general inquiry into the relation between a sensation and the reaction which follows it The astronomers had merely indicated a fact or, in Bessel's case, guessed that there was a problem of general significance in the facts The physiologists next took up the matter with a view to determining the time which a neural activity takes to traverse the length of a nerve. Helmholtz (1850) was the first to establish any results in this department of physiology Thus the two main aspects of psychometry, the variations of the "personal equation" and the physiological conditions of reaction, were independently dealt with · both parties then ceased to be interested in the subject and the psychologists took up the running The psychological field of "reaction times" has become very complex. The bare physiological operation of reaction to a stimulus can be reduced to the conditions of reflex action, involving only the peripheral stimulus (afferent current) and the movement (efferent current). Within these limits Donders and others (1861) found that the time of reaction, here called physiological time, varies for different senses. But it is possible to devise experiments which insert between the stimulus and the reaction other processes involving the higher centres and distinctively psychic acts. For example, the subject of experiment may be required to react to a stimulus of a certain kind occurring in a varied series (a red light in a sequence of lights of different colours, a sound among other sounds) or to react in different ways (with one or other hand, etc) The results must involve acts of memory, association and judgment; so that, if the physiological time is deducted from the whole, the difference represents the time taken by the mind to adjust itself. The effects of habit, attention, and distinction also enter into such experiments, but these are not "disturbing factors", they are merely phases of the complexity of normal action.

This type of work has sometimes been decried as being neither interesting nor instructive. On this point it is worth while to quote Ribot's words; they apply to other subjects besides this "It is evident that this work teaches us nothing of the ultimate nature of thought: observers do not propose to themselves this end, when they treat this problem from the standpoint of experience. Science has nothing to do with such insoluble problems. Its work consists in resolving each whole called a fact, and submitting to experiment and measure all its constituent elements. It can do no more. Scientific knowledge of a fact is the complete determination of its relations what remains is the business of metaphysics" The measurement of duration was, in fact, never encumbered by the peculiar difficulties which were attached to measurements of intensity. The utility of this kind of experiment is shown by the different applications for which it is suited: it assists in the study of normal processes, it enters largely into the study of fatigue, it may be used to determine general grades of defectiveness, and it plays an important part in the methods of psycho-analysis. Time enters so deeply into the very life of things that any possibility of making it subject to experimental conditions must be welcomed as worthy of trial.

(*c*) Time may be described as either objective or subjective. In accordance with this distinction there is a distinction between the time-measurement of psycho-physiological processes and the estimate of time which an individual may form. The latter has been a subject of experiment no less than the former. The details of method and the results are to be found in the monographs on these topics. Here, as in the previous subject, we find that many vague general conceptions about time "seeming short when the mind is occupied" and other similar notions have been given more exact form. Particular aspects of experience, such as those brought under the general head of rhythm, have afforded some valuable insight into the operations by which the mind constructs, unites and discriminates their limits the subject of "groupings" which has here come into consideration affects problems of attention and memory and will doubtless be further developed in the future On the side of theory, the estimate of time is obviously one of the most difficult subjects. It is easy to say that the number of distinguishable points constitutes the length of time, and it is empirically true that a day full of excitements is a long day but there seems to be a kind of time-intensity which is only representable as length or intensity, but which as a subject of scientific research seems as full of problems as any other sphere of intensity. The variations of time-estimate through the effect of drugs have been recorded, but not very fully; the time-estimate of dream states has also received some consideration, but as a whole this subject does not appear to have attracted the attention it deserves

(*d*) At the close of the nineteenth century more than one psychologist had begun to feel that the sphere of sensations was, at least for a time, worked out. In the year 1900 the "new" psychology diverged from its beaten track into something still newer. The movement, however new it may have appeared and however much its reputation for novelty may have been enhanced by conservative opposition, was in reality a natural form of expansion. In essence it was simply the experimental study of the higher processes. Külpe showed even in his earlier work a tendency to emphasize the subjects of attention and apperception, and to regard psychological problems from the central rather than the peripheral standpoint. The new movement is sustained mainly by pupils of Kulpe, and is regarded as the peculiar property of the Wurzburg school. As an experimental procedure it may be regarded as an extension of the sphere of reactions, its method being that of reactions with special reference to the conditions as discovered introspectively. The experiments do not require any of the elaborate machinery necessary for the study of sensory and motor reactions; the consequent simplicity of the procedure has been regarded by some of its adherents as the reason why it was at first condemned for being unscientific.[1] It is a notorious fact that Wundt expended on its condemnation more energy than was proportionate, thereby causing the new school to appear more radically different from the Leipzig school than was actually the case. The impartial spectator of the revolution of 1900 finds some difficulty in comprehending why the Wurzburg school should not be regarded as a legitimate phase of the whole experimental interest as it developed during the nineteenth century.

The work of the Wurzburg school is, in sum, the study of the thought-processes, of judgments, volitions, and the allied activities. Karl Marbe began, independently, with a study of judgments; Henry J. Watt supplied "experimental contributions to a theory of thought"; Narziss Ach wrote on volition in relation to thinking (1905) and temperament (1909); Orth, Messer, Buhler and Koffka have carried on the work in various ways. Outside of this circle Claparède and Bovet have supported the movement. Michotte at Louvain may also be reckoned in this class. Binet claimed that the "Würzburg school" would be more properly called the "Paris school". His own tendency had always been opposed to that of Wundt and his school; to him the new movement seemed merely a recognition of the wider interests which he had fostered, though he laid no claim to having inspired this particular type of work. The main point, which is common to Binet's work and to the Würzburg school, is the attempt to make a qualitative analysis of mental processes. In place of the ordinary stimulus and reaction the method here employed substituted a word and an introspective report. The subject of the experiment is stimulated to thought-activity by a given "task" which is controlled by a suggestion, e g a word which operated as a stimulus to the thought-process and in reference to which the subject will report the higher concept, the lower concept, and the associated ideas, together with other details such as the presence or absence of images In respect of method, this procedure involves stimulating subjective action, whereas experimental methods were previously designed to eliminate the subjective element and produce so far as possible an "objective" result. In respect of theory, both association and apperception are thrust into the background, a new point of view expressed by a new set of terms (act, attitude, determining tendencies, etc) is in process of formation No comprehensive work has appeared as yet, and the only indication of the way a system might be constructed on a new basis is limited to outlines in periodicals [For references see p 314 An interesting outcome of the movement is the renewed valuation of introspection. The era of Comte and Maudsley seemed to be the twilight of all introspection now there is a change, but not only in opinions; the introspection also has changed from its pre-critical to its critical form For discussion of this see *Am J Ps* 1912, where the points are elaborated by Professor Titchener]

(*c*) The fundamental characteristic of experimental psychology is its limitation to definite selected conditions. The feeling of unrest which was largely due to objections against the abstractness of the experimental outlook culminated in the organization of Applied Psychology. This is a somewhat ambiguous name for a very complex subject. It is not to be counted as a department, for it overlaps many departments; nor is it a new theory, for it employs any or all of the current theories. In a sense it is a method, and undoubtedly it is intended to be the antidote for excess of laboratory work. The chief sponsor of this development is W. Stern. The movement dated from the last years of the nineteenth century and is therefore still young: none the less there is an Institut für angewandte Psychologie in

Berlin: there is a Zeitschrift which began in 1907: and there are some representative works, including Stern's *Person und Sache*, and *Psychologie der Individualität* (1911).

The title of this last work suggests the other name by which the whole movement is sometimes designated—Individual Psychology. In this word we have the clue to the maze. If the individual, the person, is taken as the focus of interest, there will be given a centre from which will radiate all the special psychological inquiries: at the same time each result will be peculiar to the given case. For example, in place of a general statement about emotions we shall have a description of a given person's emotions under given circumstances: this will be united with all the other available data about that person, including heredity, education, physical condition and intellectual development. The prospect is large. It is in fact no less than a correlation of all the existing departments of psychology in one organized scientific comprehension of the human individual. Its nature and complexity may be inferred from Stern's description of its programme. It is to include Psychognostics, or the knowledge of human mental differences; Psychotechnology, or the science of managing human minds and practically estimating mental operations; Psychography, or the study of mental differences, as e.g. the present study of children and the sexes; Pathography, or delineation of abnormal types, with other subdivisions, such as Psychology of Testimony, which will involve a psychological criticism of history; Psychology of Crime, as the study of the mind of the criminal; and also that Kriminalpsychologie which has begun to be impartially scientific and pays equal attention to the mind of the judge.

Under this heading must be included the modern type of "educational" psychology (cp. p. 299). The evolution of this subject may be traced clearly during the nineteenth century. Herbart represents the first active phase, since his psychology became the most popular method of schematizing the processes which were supposed to constitute the mind of a typical pupil. Beneke and his followers burned with no less zeal to reach the souls of those that should be educated. But these theories could not really be applied to anything until the *method of application* itself was developed. Herbert Spencer did not assist progress in more than a vague manner: his great and deservedly popular work owes its importance to the social effects it produced; for if it shed no light on the minds of children, it illuminated the minds of parents, which (seeing that Spencer was a bachelor) shows the value of a detached point of view. Neither the abstract theoretical method (Herbart) nor the equally abstract biological generalizations (Spencer) could do exactly what was required to make a distinctive educational psychology. The idea that individuals must be studied as individuals was the additional element required. Consequently the work of Galton (p. 294) or of Stern may be taken as the real nerve of modern educational psychology. Such a work as the *Educational Psychology* of Prof. E. L. Thorndike (1903, 1910, 1917) may be regarded as typical, and other names (especially Meumann) which have become familiar, are equally suitable for quotation as proof that individual psychology, child psychology, and educational psychology are phases of one subject.

§ 2. The most decisive factor in the progress of modern psychology is undoubtedly the theory of evolution. Into a mass of facts which were either chaotic or artificially arranged evolution entered as a principle of natural order and logical arrangement. No single method owns all the virtues, and evolution has been both over-rated and underrated. But in all cases it has dominated, whether as general principle of method or as specific theory of genesis. And, in spite of occasional intuitions, it is true to say that there was no adequate concept of evolution before the nineteenth century. Then the idea became active in two distinct ways. Hegel developed it as the concept of an ever-expanding idea, the movement of a permanent Form which expressed itself eternally in the cosmic Matter. This was the idealistic view of evolution, eminently valuable in some points, but not adequate to the whole range of Nature. Where it was possible to indicate the psychological factors in the evolution, this view gave a new impulse to thought. Morality and social life were the departments to which it was most applicable, and to the Hegelian philosophy we owe the first beginnings of social psychology.

The Hegelian school always tended to rest in the Form and neglect the claims of Matter. Its influence was checked by the rise and progress of Positivism, a mode of thought by no means devoid of metaphysics, but certainly not in sympathy with the Hegelian scheme. The shibboleth of positivism was facts, the leaders of positivism were theorists, that was at once the secret and the tragedy of Positivism. Comte, the founder of Positivism, disliked introspective psychology, he gave most attention to the objective works of the mind, to customs, laws and institutions. As these must be studied in historical order, history becomes the objective aspect of mental development. every civilization that research discovers is a fossilized type of thinking

Comtism may be regarded as the first phase of Positivism, which afterwards branches out into a general positivistic view of nature and a specific sociology. Sociology usually contains a tacit reference to psychology and remains closely allied to social psychology. But another and a more definite departure marks the real beginning of social psychology. This was the work of the Herbartian school In 1856 Moritz Lazarus published a work entitled *Das Leben der Seele*; in the same year Hermann Steinthal (1823-99) produced *Der Ursprung der Sprache*, Theodor Waitz began his *Anthropologie der Naturvölker* in 1859. These works form a group by reason of certain common characteristics. They all deal with what the Hegelian calls the Objective Spirit; they all approach the subject under the influence of Herbart, who inspires them with psychological rather than logical methods of analysis, they are all positivists in temper and unite empirical analysis with historical synthesis. The general subject may be defined variously as collective psychology, ethnic psychology, or comparative folk-psychology.

Social psychology is the term commonly used in English to cover a number of allied but distinct types of inquiry. Kant had recognized the extent to which the object of thought owes its reality to the relations between persons in a community; for some Kantians objectivity means little more than the fact that the individual's idea has significance for other individuals, so that the idea is saved from complete subjectivity by becoming the object of consciousness in general Hegel tended to treat this notion of a general consciousness in a way that removed it from the empirical sphere. Herbart opposed this as a mystical tendency, and the Herbartians are marked by a persistent anxiety lest their concept of consciousness as modified by social unity should be mistaken for any form of transcendent consciousness or "over-consciousness." Such terms as Volkgeist, spirit of the age, national consciousness and the like are easily misinterpreted and used as names for independent entities. The genuine psychologists protest against such misunderstandings, and their terms must always be taken as referring to individual minds whose functions are dependent upon social interrelation (note p 315). With this caution we may proceed to point out that social psychology subdivides in various ways It may deal with particular functions, such as speech, it may deal with general characteristics, such as the customs, the religion, or the art of a given tribe or nation, lastly, it may be engaged in the analysis of forms of social interaction as affecting individual mentality. These differences can be traced in the works of writers during the past fifty years.

Broadly speaking social psychology is the development of one aspect of several older sciences, and each phase of it springs from one of those sciences. Thus the study of language is philology. If psychological analysis is applied to the sphere of philology, there arises such a work as that of Steinthal, for whom speech is a kind of reflex-movement, expressing the emotions and ideas which stimulate the creature to utter sounds; emotions, ideas, forms of apperception and all other mental processes find their counterpart in the evolution of language. Grammar is thus made a science of linguistic expression, supported by the analogous study of gesture and intonation.

Similarly, the second type of social psychology is closely allied to anthropology. Writing in 1865 on the *Early History of Mankind and of Civilisation*, E. B. Tylor began what has been ever since the most discussed theory of social origins, particularly in reference to the origin of religions from animism. Anthropology, sociology and psychology all have a root in Tylor's later work, *Primitive Culture* (1871). Edward Tylor and Herbert Spencer were the great anthropologists of that epoch, and both were conscious that their work had direct bearing on problems of psychology. Tylor's sphere was more definitely anthropology, he travelled widely and was at home in the manners and customs of many lands. Spencer was more familiar with philosophy in general, and he directed attention to the possibilities of the subject in an article on "Comparative Psychology" (*Mind*, 1876). Lazarus and Waitz both come into this group of writers, representing the development of anthropology into ethnic psychology. It is the fashion now to regard any type of ethnology which does not deliberately limit itself to houses, clothes and weapons as psychological in character, so that the titles "mind of primitive man," "the soul of the savage," and other periphrases are symptoms of the prevailing attitude

Lastly we come to what is neither psychic philology nor psychic anthropology, but social psychology in its most distinctive form. This consists in the study of mental processes as conditioned by social grouping It is an analytic study which deals with primary psychological data, not with arts, sciences, or languages which are secondary data Further, its chief concern is with the variations of conduct which seem due to social environment, so that it may be regarded as a psychic biology in some sense. The connection with biology is in some cases consciously realized, and the subject is then defined in terms of functions; we are introduced to the organic life of a community whose integral cells are the individual minds. In general this may be regarded as the typical attitude of psychologists the mind of the individual is the starting-point, and the social mind is deducible from the individual interests and emotions. But the opposite view is also maintained psychology being made dependent on sociology, we are to regard the individual type as a product of the collective, and, in general, sociology must be regarded as the basic science from which alone it is possible to approach the mental characteristics of individuals. The French school, represented by Durkheim, Lévy-Bruhl and others, is mainly responsible for this view, which continues to excite controversy. In certain directions, e.g. the genesis of conscience or the development of religious beliefs, the sociological way seems at least easy · in others, e.g. the questions of time, space, sensation or memory, there seems to be an obvious objection to attempting any deduction of these functions from the basis of community. In fact there seems to be some confusion between content and function throughout this subject, and perhaps a proper distinction would assist any future attempts to define social psychology. This may be said without forgetting that even the thought of time (percept or concept ?) may be inextricably complicated with tribal customs and common interests of rainfall and harvest

A typical form of modern social psychology was presented by Gabriel Tarde (1843–1904), who distinguishes three aspects of psychic activity extra-mental, intra-mental, and inter-mental The first refers to the action of objects on the mind or the influence of external circumstances. By an obvious reaction from the earlier views, which were derived from Mill's disciples, this aspect is regarded as comparatively unimportant. For all " circumstances " are affected by the social medium, and can be distributed between the intra-mental and inter-mental phenomena, which therefore cover the whole field This attitude necessitates a fresh basis for the whole structure , sensation is no longer regarded as the proper starting-point belief, desire, and their effective expression are the real " elements " Here Tarde allies himself to the type of speculation developed by Schopenhauer , emphasis is laid on the " dynamic " factors, sensations being regarded as relatively passive and mere symbols. Psychology must be built on a dynamic basis, from emotions rather than cognitions, in agreement with Spinoza's formula *cupiditas essentia hominis.*

All manifestations of psychic activity are brought by Tarde under the heads of Belief and Desire . pleasure and pain are sensations united with desires · images and desires make up what is usually called desire ; images and belief constitute memory ; desires and judgments make volitions.

Every object is primarily an object of judgment; objects are therefore infinitely variable; only the principles of judgment (belief, desire) are permanent. Sensations therefore cannot be fixed units for psychology; what we believe and what we desire constitute the real basis of life, not abstract sensations. The higher stage, that of reflexion, is simply the more complicated form of these activities. For the desirable in general is that which we believe to be desired, the "true" is that which we believe to be believed by others. The Good and the True are thus irreducible categories; belief and desire are the chief classes; under the former come intellect, language, philosophy and science; under the latter laws, customs, arts, institutions and industries.

Such was the scheme worked out by Tarde. It is obviously modern psychology pervaded by the concept of the *milieu* and that sense for social relations which had been characteristic of the French writers since the eighteenth century. Its exaggerations became obvious even to its author. The neglect of sensations and exaggeration of belief made it impossible to construct any complete theory of mental processes. In compensation for this Tarde had new and fruitful ideas for the development of social psychology, and his well-known treatment of the "laws of imitation" remains to prove their value. The Ego becomes for Tarde a point of intersection, the arrival platform of physiology and biology, the starting-place for social psychology. The characteristic novelty of Tarde's work was really due to the fact that his primary interest was criminology: he did not see the individual as a complex of faculties, he did not sympathize with the metaphysical tradition of a social consciousness, and he did not fully appreciate the kind of pathology which developed from the study of hysteria. For him man was an agent, always striving to realize ends which the environment suggested and might either sanction or reject. Tarde began (in *La Criminalité comparée*) from the data of suggestion, including atavistic suggestion from the subconscious. Motives he regarded as chiefly excuses for the actions which emotional suggestion dictated. Imitation was for him the adoption of an idea (not mechanical or physiological copying), and as such the spring of action in the general sphere of inter-mental life.

In the work of Tarde we have the most significant, and in some ways the most influential, expression of the demands for a wider psychology than was offered by either associationists or apperceptionists It offers a new horizon it preserves an old tradition, for Malebranche could be cited as a predecessor (ii. 232), but gives to the tradition a new and living force. Its complement and contrast are to be found in the form which German psychology took when it also passed out of the laboratory and the circle of experiment to interpret life and history

Wundt's *Völkerpsychologie*, though geographically and chronologically its author is the successor of Lazarus and Waitz, is in reality a work of a different type The Herbartian school had attempted to build a definite psychology of peoples in conscious opposition to those who in the eighteenth century had vaguely surmised that human progress and national character could be reduced to terms of climate and good A general and uncritical survey of the progress made in this subject reveals a natural evolution for the first stage was the conception of a natural history of the "genius" of different nations, the second was the attempt to eliminate common primitive elements and show their function in the general development of human culture, with emphasis on supposedly primitive modes of thought and *Naturvölker*; the third is Wundt's conception of psychological types and psychogenesis elaborated in the general field of human culture. The difference between this last effort and the preceding one requires some exposition.

Wundt, as we saw above (p. 153), regards all psychic life as actuality, not substantial nor postulating a substance, but constituted by acts which are from first to last acts of will. The individual organism exhibits such acts in its reflex movements first and in its apperceptions last the "soul" of the individual is a name for the sum of these acts, and similarly the "soul" of a tribe or nation is a name for all the acts which imply but also transcend the individual psychic selves. The position is a somewhat delicate poise. The "folk-soul" is decisively not an objective "spirit of the community," a kind of national (or international) ghost. It is called a "soul" because that term is used similarly for the individual's psychic activities taken as a unity equally in both cases soul is not a thing, not a possession analogous to private or public property. This must be emphasized so that we may go on courageously to the inevitable disaster. Wundt has declared all psychic actuality to be immediate Can we succeed in passing over from individual experiences to the social life without contradicting the dogma of immediacy? Wundt has at least made a gallant attempt.

The strength of Wundt's position as analyst of the "social mind" is nothing more or less than his command of physiological and psychological material. He decides that language, religion and custom are the true content of folk-psychology; moreover, these are the equivalents on the social plane of ideas, emotions and volitions. This is neither necessary nor convincing When we turn to the exposition we find in fact that it is not even useful Language, for example, is treated as a system of communication by signs, and may include the cries of animals, human speech, the deaf-and-dumb alphabet, or any other serviceable means of expression, we are told the significance of physiological structure in relation to these activities, and much else of scientific interest; we feel, in the end, that language has been *analysed* down to its least distinguishable elements, and for that we give thanks. Similarly, in the case of religion, the myth is dealt with as a product of the imaginative powers, and the treatment of imagination is a preface to the whole subject of art, æsthetics and religion. It is very interesting to learn how far primitive art is affected by illusions which experiments bring out in the modern laboratory · all this has value, and there is a great deal of it; but all of it taken together cannot blind us to the fact that this is individual psychology on a large scale, and not anything that need be called "Folk-psychology." In brief, Wundt has made a brilliant use of his psychological material to elucidate some phases of history. Ethnology we know; history we know; the interest of the "primitive mind" grows upon us daily; but to all these the "Folk-soul" is a theoretical addition that only raises vain hopes or reflects a useless mysticism.

The three imposing volumes of the *Völkerpsychologie* are an extraordinary achievement and have unique value, but they are an example of applied psychology in the sense in which psychology, as a point of view, may be employed by the historian, the philologist, or the novelist. To state the point technically, there is a fundamental difference between mind as individual (or subjective) and "objective" mind, between Seele and Geist. Progress of thought on this topic has now produced a demand for a Geisteswissenschaft, a history permeated by psychological ideals and principles, a history of culture as the abstract impersonal sequence of stages in human life the world over. Such a history must necessarily come close to psychology, but it is not itself psychology. Here we reach one of those points of expansion at which confusion for a time may prevail, but it is daily becoming clearer that Hegel's doctrine of an "objective mind," as it ceases to be psychology, may become a new outlook for history.

At the present time the name "Social Psychology" has a very indefinite significance. The greater part of the writing issued under this title is a discursive treatment of selected phases of human life. Gustav Le Bon set the fashion of treating a group as a psychological unit with a "group-mind" and a group-psychology. He prefers the term "crowd" as a name for a collection of persons uniting in action, and his best-known work is called (in the English translation) *The Psychology of the Crowd*. Le Bon has written several books on this theme, all interesting and inspiring. He has found many imitators and followers; even military writers confess that his principles have illuminated their views of drill and barrack-room discipline. It is interesting to recall the fact that Samuel Johnson expressed the fundamental idea of the whole matter in his *Vanity of Human Wishes*:

> Restless burns the fever of renown
> Caught from the strong contagion of the gown!

Le Bon seems really to be in the same position as many other writers on this topic: he either uses psychological analysis to elucidate historical facts, as when he explains the action of the leaders of the French Revolution by saying that they did not lead, but were driven by fear; or he trusts to vague generalities. The one point which the theory usually fails to recognize is the distinction between the formation of a common mental state in a "crowd" and the formation of crowds by the congregation of individuals who previously had similar mental tendencies or similar instincts That co-operation reinforces mental tendencies need not be disputed the point at issue is whether the "crowd" really means more than a plurality of individuals whose psychology is and remains properly individual.

The root of these ideas is to be found in the sphere of animal psychology and the notion of herd-instinct. Galton wrote one of the best descriptions of this type of behaviour in his essay on *Gregarious and Slavish Instincts* He there makes a very interesting study of "the wild parts of Western South Africa" He states his thesis thus "I shall endeavour to prove that the slavish aptitudes in man are a direct consequence of his gregarious nature, which itself is a result of the conditions both of his primeval barbarism and of the forms of his subsequent civilization." Primitive conditions, natural selection, and heredity are the factors which explain the tendency of human beings to remain in groups and to adopt common forms of action This seems to be the right method it explains common action as due to individual qualities and avoids the fallacies which have been exploited under the terms imitation, suggestion, or "crowd-psychology" Incidentally we may add that Galton's *Inquiries into Human Faculty* (1883) is itself a very important work for all interested in social psychology. Galton's work covers a wide field. He wrote a pioneer study called *Hereditary Genius: An Inquiry into its Laws and Consequences*", another on *English Men of Science*, many essays on heredity as shown in men and animals; he was the first to make experiments on association, and an inductive study of images, in which he raised the interesting topic of coloured visualization (i e. the tendency which some individuals exhibit to see numbers of other images with constantly associated colours).[1] Galton was one of those informal men of genius who come under no specific class, but make contributions to many subjects: in much of his work he was a psychologist, and in the sphere of social psychology he exhibited a refreshing directness and sense of proportion

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[1] This phenomenon (synaesthesia) was previously studied by E. Bleuler and K. Lehmann—*Zwangsmässige Lichtempfindungen durch Schall* u.s.w.,

We have tried to show concretely the vagaries of this ill-defined subject, and to draw the conclusion that social psychology has two main directions, of which one is toward history and sociology, the other toward a specific kind of analysis. Two books now widely read may be cited as examples of this dualism Prof E A. Ross writes on social psychology in the manner of the sociologist. Social psychology, as he conceives it, "studies the psychic planes and currents that come into existence among men in consequence of their association." He adds that "the individuality each has received from the hand of Nature is largely effaced, and we find people gathered into great planes of uniformity." The subsequent chapters elaborate topics such as suggestibility, the crowd, the mob mind, custom, fashion, conventionality, and public opinion We leave the reader to discover how much of this is properly psychology: at any rate the hypothesis of a kind of innate individuality, which is ultimately effaced, seems best suited to end in a description of human automata. Some writers do actually reach that conclusion!

In antithesis to this type of work there is the *Social Psychology* of W. McDougall. This is primarily psychology, and the term "social" is a limiting adjective It is as a basis for the social sciences that this psychology is formulated, and "the department of psychology that is of primary importance for the social sciences is that which deals with the springs of human action, the impulses and motives that sustain mental and bodily activity and regulate conduct." Here then we have really a department of psychology differentiated by specific scope and interests In accordance with both its actual evolution and its essential features, this psychology is said to be dependent on the progress of evolutionary methods and biological researches. In the main body of the work emphasis falls chiefly on the instincts and the emotions common to normal individuals, to the behaviour which these tend to produce, and to the modifications of that behaviour which are due to consciousness of other persons who praise or blame. Without discussing the special theories broached in this book, we may say that its main direction and tendency seem to be the only ones likely to establish themselves as a genuine psychological treatment of social phenomena, free from entertaining but irrelevant excursions into history and sociology.

§ 3 Child-psychology is essentially a modern subject. The statement is often made, that neither ancient nor mediæval writers recognized the importance of children; it it only true in part, and every reader of Plato will easily correct it but we need not darken counsel by too great accuracy. It remains practically true that the first systematic attempts at a psychological study of childhood were made by Tiedemann (ii 336) in Germany and Restif in France Other isolated but important works preceded the popular vogue of the subject. In 1851 Lobisch published his *Entwickelungsgeschichte der Seele des Kindes*; in 1856 Sigismund produced his book *Kind und Welt*, followed in 1859 by Kussmaul's *Untersuchungen ueber das Seelenleben des neugeborenen Menschen*

Darwin set an example, often followed, by keeping a daily record of the development of a child's activities This procedure implied that the understanding of the human mind must begin from observation of behaviour, in other words, it was an objective method not essentially distinct from that which Darwin used in studying the expression of the emotions. Taine, who regarded himself as an enlightened positivist, quickly followed in the same path with an essay of a very similar kind, but the first effort which reached the dimensions of a book on the subject was Wilhelm Preyer's *Die Seele des Kindes*. Preyer was a physiologist who studied the senses, wrote on perception, on general physiology and on Darwin, but has little claim to be considered a psychologist. His work has been subjected to many criticisms, chiefly through its tendency to combine the observation of behaviour with a large amount of interpretation derived from the mind of the observer; but while many faults of detail can be pointed out, Preyer's book remains one of the foundations of child-psychology, and reached a seventh edition in 1908. In 1895 Sully produced his *Studies of Childhood*, which for the most part follows Preyer, but has a more distinctively psychological character, because it discusses imagination, feeling, will and the beginning of æsthetic interests Sully made a further contribution to the subject by the foundation of the British Association for Child-study.

Child-psychology as conceived by Darwin begins from the objective biological standpoint. In so far as the child is studied before it has any power of verbal expression, the method and results are akin to those which belong to comparative psychology Historically the movement indicates a general expansion of comparative psychology produced by regarding the animal, the child, and the adult as different levels reached by the evolution of mind The expansion of the subject was accelerated by the progress of experimental psychology, while the fact that reactions to stimuli may be a common denominator for human and animal psychology served to undermine the sentimental view of the human mind as something unique, an entity beyond scrutiny G Stanley Hall, founder of the first laboratory for experimental psychology in America (1883), brought to the study of children that refinement of method which was lacking to the earlier writers and to Sully Stanley Hall has added to his earlier work on school children a study of the adolescent This fills the gap which seemed to be created by distinguishing the child's mind from that of the adult, for between these extremes there is as it were a second birth and an equally distinctive period of acquisition and development.

The evolutionist finds an interesting if not very exact analogy between the individual and the race. The biologists, from Goethe onward, were fond of dwelling on the dictum that the individual is an epitome of past generations, and that the individual's development repeats the phases of human history from the childhood of man to his civilized maturity. The biological, sociological and psychological trends of thought were brought together by James Mark Baldwin in a work whose title speaks for itself, *Mental*

Development in the Child and the Race. The success of this book which has been considerable both in its English and its German form, may be regarded as a proof that it provided for many readers the synthesis of ideas which time had prepared them to expect. The Folk-psychologists had made familiar the idea of a continuous evolution of the content of thought, and therefore also of the thought which could contain the ever-increasing complexity of material. It was Baldwin's merit to see the converse of the idea of racial development and to apply to the study of the individual mind the scheme of racial development. We may class this work, therefore, as a psychology of the social individual, a class of constructive theory which was further enriched by the same writer's work on *Social and Ethical Interpretations.* In the hands of Tarde ethnic psychology became an analytic psychology of social groups. With Baldwin child-psychology became a study of the genesis of the social type of mind, an exposition of the evolution of a *socius.*

We have noted two fundamental movements within the sphere of child-psychology, the former more concerned with observation and experiment, the latter with constructive speculation These constitute a class of work which must be distinguished from that kind of child-psychology which consists merely in the application of general principles to the particular cases furnished by children It is gratifying to be able to say that a large amount of attention is now devoted to child-study; the quality of the normal mind at various ages, the particular aptitudes which make different methods of education suitable to different stages of development, the types of abnormal development—all these and many other departments of study have evolved under the influence of a growing belief in applying scientific methods to the study of mental development But these are all ways in which psychology may be applied to the problems of child-life and constitute no new departure.

On the general significance of this branch of psychology I may quote the words of Prof. Stanley Hall. In 1903, in connexion with new movements then undertaken, President Hall wrote · "At first child-study passed through a period of criticism such as few scientific movements in the modern world, save evolution alone, have had to sustain. It had, too, a host of camp followers who had little conception of its meaning and who offered many very vulnerable points of attack. Some four or five years ago, when the critics were loudest and most aggressive, many superficial observers thought the movement dead But it has steadily spread to department after department In insanity it has given us the new studies of *dementia præcox*, has almost recreated the department of juvenile criminology, furnished a new method of studying the most important problems of philology, has revolutionized and almost recreated school hygiene, made adolescence, a strange word ten years ago, one of the most pregnant and suggestive for both science and education, given us the basis of a new religious psychology; and laid the foundation of a new and larger philosophy and psychology of the future, based not on the provincial study of a cross-section of the adult mind, but on a broad, genetic basis "

[A very complete historical survey of the development and present status of pædagogical psychology is given by Dr Ed. Claparède in his *Psychologie de l'Enfant et Pédagogie Expérimentale* As this is now available in English (*Experimental Pedagogy*, Arnold, 1911), it makes further treatment of the subject here unnecessary]

§ 4. Animal psychology is a branch of comparative psychology and belongs distinctively to the sphere of objective psychology The souls of animals have been the subject at all times of various discussions, some inspired by religious prejudice, some by anti-religious interests, a few by scientific zeal The naturalist has contributed his collection of curious stories; the pantheist has added his deductions from the postulate of an omnipresent soul; but only in recent years can we say that any organized scientific inquiry has been prosecuted. This has been stimulated by the ideas of the evolutionists who were necessarily led by general principles to abandon any dogmatic separation of human from animal modes of behaviour The very term " behaviour " is itself a mark of the change which gradually came over the whole subject when the advance of biology drew attention away from the introspective method to the study of the objective manifestations of mind.

Lamarck[1] had not failed to see that a doctrine of development must be significant for the general question of the relation between structure and function. The man of science cannot rest content to arrange a scale of organic forms without believing that there is some correspondence between it and the allied functions. If animals have eyes, they see; if they have nerves, they feel; if they have brains, they may be supposed to think in some degree. So far the matter was in an unsatisfactory position for want of data; Charles Darwin supplied the observation required. In *The Expression of the Emotions* Darwin begins with the movements which are similar in men and animals, and therefore constitute the common objective aspect of emotional states. In the *Descent of Man* the same method was applied to the question of moral sentiments, and the gregarious instincts were treated as the prototypes of the human sense of kinship. These works were thus the starting-points for further study of animals as individuals and of animal societies.

From 1860 onwards two opposed tendencies can be traced, one towards the complete humanizing of animals, the other toward the reduction of man to the level of animals. Both erred in their treatment of essential differences; for however much a difference of kind or essence might be rightly denied, the difference of degree amounting to a practical difference in kind still remained. Writers like Brehm, Büchner, Girod-Marshall, Haeckel, Karl Kraepelin, ran to extremes of anthropomorphism; they expended upon the lower world of animals all the fallacies which they most condemned in those who translated human faculties into divine attributes. They looked at nerves and saw sensations; they studied brains and wrote about intellects. What was presented as irrefutable fact was in reality pure imagination. Half a century has not sufficed to correct errors that were at first no more than the intrusion of irrelevant purposes into scientific researches. The naturalists or the poets may be excused if they allow their emotions to suffuse their works with delicate imaginations:

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[1] See p. 226.

physiology and biology must be content with the dry light of intellect.

Physiology began with the problems of structure and function. From J. Muller onwards continuous progress was made in this science (*vide* p. 108) and the result was a demonstration of the correlation between the nervous system and some psychic functions. These indications were united by G. J. Romanes to a general principle of evolution according to which man is to be regarded as in no way distinct from animals, except in so far as "human" implies a greater amount of development. The interest shown in this conclusion merely reflected the strength of the contemporary view that man was unique: moralists and religious teachers[1] were nervously anxious to preserve what they regarded as the dignity of man; in consequence they exalted by opposition what in itself was not important either for culture or science.

The position of Romanes was adopted by Haeckel, but while the general features are the same in both theories the work of Haeckel differs widely in detail from that of Romanes. Haeckel combined the highest scientific abilities with an extraordinary degree of speculative rashness. He developed physiological and biological propositions into the formulæ of a cosmic philosophy; psychology was reduced to physiology but, in compensation, the physiological starting-point was made psychic, and this original substratum was named Psychoplasm at its lowest stage of development, Neuroplasm in the higher animals. Haeckel regarded any group of functions as psychic operations; he speaks of "cell-souls," "nerve-souls," and finally of the human soul as a mixture or fusion of cell-souls. The whole scheme has a curious interest for the historian. In it there emerges again the spirit of the early Greeks, with the cosmic sweep of their hylozoism and their sublime veneration for inadequate analogies. We may look with contempt upon the ancient doctrines or the vagaries of mediævalism; we may quote with a smile the *vis vegetativa* and the *vis motrix* of the twelfth century Aristotelians, but there is nothing in the whole history of thought to rival the curious perversity of Haeckel's monism.

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[1] Romanes wrote in 1878 *A Candid Examination of Theism*. Other works noted, p. 315.

But if the psychologist gained nothing directly from this treatment of the "cell-souls," the general theory of the psycho-physical life was profoundly affected. By experience we *know* experience; by observation and experiment we may advance to a further *knowledge about* experiences. This may not be a tenable distinction for a theory of knowledge, but it has some value for practical purposes. The final outcome of centuries of strife was seen after 1870 to be no more than a determination on each side to preserve its rights. At that time the point at issue was not clear; now it has become more obvious. Knowing and knowing about are two phases of knowledge which differ in their identity; intuition may emphasize the former, science may insist on the latter, but the actual process called knowledge combines both. The victory therefore could not fall to either party and a compromise had to be evolved. The term "behaviour" marks that compromise, for it grants to the physiologists and biologists that their knowledge about the mind is of value, and at the same time by avoiding such crude statements as that thought is motion, or the mind is the brain, it preserves the essential point of psychology—its immediacy.

For the physiologist the unit is a mode of observable motion. The simplest mode of motion is the reaction which an organism makes to some part of its environment. This reaction presupposes a definite power of response which may be called irritability; it is in reality the barest possible way of describing life. How far such reactions can be called "psychic" is largely a matter of definitions. They are primarily observable events and as such can be treated purely objectively. The most elementary reactions have been called "tropisms," and described as motor reactions dependent for their origin on the specific irritability of the skin and for their character on the symmetrical structure of the organism. A tropism is therefore distinct from a purely mechanical motion, such as that of a stone falling through space; it is distinctively a function, but so entirely controlled by the stimulus that it has no conceivable variability. Hence this leads to a mechanistic conception of life Next above tropisms come reflex movements, defined as automatic discharges of energy through nervous centres and differentiated from tropisms by this implied presence of a nervous system. Tropisms are classified as Geotropisms, Phototropisms, Chemotropisms, etc, according to the nature of the effective stimulus They are to be seen in plants, e.g when the plant grows "toward" the light, that is to say turns in the direction of the light through the chemical stimulation of the cells directly exposed to the light This term therefore marks a link between plant and animal life. The term reflex action similarly links animal and human life, completing the chain. From this point of view it is intelligible to say that an animal is a "chemical machine," especially if the brain is regarded as a complex nerve-centre adapted to produce complex movements by a complex system of chemical changes The question is not whether this is true, but whether it is all the truth

On the lines of a mechanical theory instinct must be explained as the name for actions which achieve useful results without being directed by intelligence toward such results. Here again the interpretation of the data is relative to the ancient problem about final causes, and the still more ancient problem whether an event which is intelligible must therefore be the work of intelligence. Does the bird understand its nest-building in the sense in which we think it an intelligible (or intelligent) proceeding? Is instinct equivalent to conscious intelligence, or to an unconscious indwelling of "natural reason," as the pantheistic mind views it; or is it simply a sequence of motor cues propagated from one explosive state of neural matter to another? This is a metaphysical question which can be left alone while we consider whether experiment and observation have anything more to say.

The kindly observers who from 1860 to 1890 entertained a large public with curious narratives were rudely silenced by the reports which Jacques Loeb published in the last year of that epoch. From this work arose a new type of comparative psychology, the mechanistic school of Bethe, Uexküll, Th. Beer and Ziegler: for those writers the higher animals have consciousness, the lower have not. This does not differ from the Cartesian position except in being more generous about the "higher animals"! The reaction was violent, but not acceptable to all. Nuel carried it to its last extreme by totally reversing the earlier attitude; he applied the idea of tropisms to the human animal, and practically denied the right of existence to all psychology. A humorous reply by E. Claparède (*La Psychologie comparée est-il légitime ?*) pictured the physiologist from Sirius or Saturn studying the inhabitants of this planet and describing the "negative heliotropism" of actresses, the disease-tropism of doctors, or the corpse-tropism of undertakers! The more serious objection brought against the tropism was that as a theory it made simple that which was not really simple. In 1902 experiments were undertaken to see whether when animals repeated a given complex operation they made any changes in it which would indicate the presence of a non-mechanical process of adaptation. The results were most completely formulated by Jennings in the series of monographs which appeared ultimately as *Contributions to the Study of the Behaviour of Lower Organisms* (1904). The "Method of Trial and Error" was the particular contribution made by Jennings to the subject. Though not in agreement with the followers of Loeb, Jennings was not so much the opposite as the complement of that school, for the question at issue was not the truth of "tropisms," but their sufficiency. While no return could be made to the age of Lubbock or Romanes, there was a general inclination to make distinctions between different grades of organism and take into consideration the complexity of conduct which seemed to be the counterpart of the complexity of the nervous system in higher animals. Comparative psychology needed observation more than theory, and the work of collecting data was the occupation of most importance. A modification of the mechanistic position has been upheld by G. Bohn, who is opposed to both anthropomorphism and the bare acceptance of tropism; his position is described as "ethological," a positivistic attitude limited to the empirical study of animal behaviour.

The present status of animal psychology may now be indicated. Described as a science of behaviour, it is by some writers withdrawn from the sphere of psychology. In other words, the reaction against anthropomorphism tends to a rejection of "comparative psychology." For these writers physico-chemical explanations of action are the only explanations which realize a scientific ideal; they alone deal with facts and exclude fancies. The opponents claim that this simplification is a mere limitation of the field, the study of physico-chemical processes is not a study of organisms, but only of some processes in organisms. Hence another group of inquirers is concerned primarily with behaviour in a wider sense, the whole sphere of habits and in general the life of organisms in such various functions as food-seeking, mating, and self-defence These two are only partially antagonistic, and their advocates may find a way of reconciliation, at least in so far as the latter are willing to accept the former as supplying part of their material. The true antagonist of both is the thorough-going vitalist.

These disputes attain a further significance when looked at from the point of view of the sciences. Physiology, biology and psychology are all concerned. The study of animal life leads, and has always led, to the final question of human life. The work outlined in this section finds its natural conclusion in a definite attitude towards the whole field of psychology which is expressed in the limitation of psychology to a science of behaviour. There it must at present be left, for the struggle now beginning between those who will and those who will not accept such a definition of psychology still awaits its final solution[1]

§ 5. The development of psycho-analysis as a definite method was preceded by a considerable amount of interest in the phenomena of double personality and dissociation. The French school, chiefly Azam, Binet, Féré and Guinon, were pioneers in this field. The work done by these inquirers was preparatory, for it was limited to the study of cases which were regarded as curiosities of psychology and reported as abnormalities, with no attempt to bring them under any comprehensive law. This empirical stage must be distinguished from the later developments which interest the psychologist by their claim to formulate principles which are fundamental for the study of all forms of mental development whether normal or abnormal.

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[1] See references to works, p. 315. It is of some interest to note how the aims which lead to "Individual Psychology" also dictate in relation to animals the need for "ethology"—J. S. Mill's word!

The history of Psycho-analysis begins from the work of Joseph Breuer, a physician of Vienna. Its development has been due mainly to Sigmund Freud, also of Vienna. By origin and nature psycho-analysis is a method used in the treatment of mental derangements, particularly those numerous and varied derangements classed under the head of hysteria The central idea has been expressed by Freud in the following way "Hysterical patients suffer from reminiscences their symptoms are the remnants and the memory symbols of certain (traumatic) experiences" The researches were at first dominated by the ideas of Charcot, a physician of the Salpêtrière in Paris who had won for himself a world-wide reputation in the treatment of hysteria. But Charcot (as Freud says) had no natural bent for creating psychological theories, his disciple Pierre Janet was the first to formulate the doctrine of dissociated personality and explain the symptoms of hysteria as marks of conflict between groups of ideas. The particular advance made by Freud consisted in dispensing with hypnotism and devising means for bringing into consciousness the latent factors which caused the mental derangements. Those factors were called "repressed" elements, and the theoretical basis of psycho-analysis is the idea that in hysteria the observed symptoms are morbid phenomena due to repression of some idea or group of ideas.

The application of this theory in the sphere of therapeutics need not be discussed here; for the history of psychology the subject has a wider significance. It has developed primarily into a comprehensive study of all latent processes of consciousness and of dreams; it maintains that mental processes are persistent factors of a continuous development, since it tends to show that experiences are never wholly lost but survive as modifications of later thoughts; it has led to a new and very significant development of experimental work in the "Association Method" of C. G. Jung, which is quite as applicable to normal as to abnormal mentality.

The general difference between the teachings of Janet and Freud may be described by calling Janet's conception static, while that of Freud is dynamic. Janet considered that hysteria involved a limitation of the field of consciousness and a loss of psychic tension Freud observed that an increase of tension in some respect was usually present, the apparent reduction being due to a conflict, of which the patient is not directly conscious and by which psychic energy is absorbed From this dynamic standpoint such a phenomenon as loss of memory is to be explained by the presence in the total psychic state of an active repression, so that the elements said to be forgotten are really being actively kept out of consciousness This operation is dependent on affective states which control the intellectual operations without otherwise manifesting themselves A common phenomenon due to such affective promptings is that which has been named by Ernest Jones "rationalization," i e the tendency to account for actions by reasons which assist in concealing motives that are being repressed

This is not the place to explain at large the technical methods of the school, but reference may be made to those principles which affect the conception of psychology. Of those the most comprehensive is the acceptance of the idea of causality; Freud's position involves the principle that no effect lacks its cause, and this can only be regarded as a truly scientific standpoint. A method which can claim to eliminate chance from its categories must command the highest respect, and Freud has undertaken to explain by "the psychology of everyday life" just those points which the average person is content to regard as "slips" or "accidents" The other point of supreme importance is the belief which this school cherishes that it is able to find universal principles underlying all thought-processes. Its experimental work will, if that is the case, serve as a basis for explaining human actions throughout history In the belief that this is possible the school has produced analytical studies of the artistic and literary movements of the past as well as the present, dealing particularly with myths, symbolic art, philosophical systems and political ambitions.

§ 6. Social psychology and psycho-analysis co-operate to regulate and reform many aspects of life. Chief among these would be reckoned the phenomena of crime. But these and other allied subjects will not be discussed because they are essentially applications of the psychological method to specific groups of persons. That the application is consciously made can be seen from the history of the subject in the nineteenth century Gall "localized" *cruelty* in his scheme of propensities in 1841 criminality was itself assigned to a particular part of the brain (or skull!) with the addition of heredity, this easily became a theory of criminal types which could be known by specific marks. Lombroso (*L'Uomo delinquente*, 1873) made popular this idea of criminal types It was opposed by Tarde (*La Criminalité comparée*), and has steadily receded into oblivion. Yet to Lombroso belongs the credit of originating the whole modern science of Criminal Anthropology and creating that interest in the criminal as an individual which has since passed beyond Lombroso's position To the earlier writers crime seemed to be a definite quality of the organism, no less than red hair or a low forehead The first essential was the reduction of crime to terms of relativity and function the definition of specific crimes is relative to the stage of civilization at which the act is performed : the act which constitutes crime is a function of individual character Later writers accordingly employ a totally different method. In this they have been materially assisted by the studies in "fixed ideas" and other forms of hysteria for the work of Janet and his school was seen to be highly important in relation to theories of responsibility.

It is not the business of the psychologist to say whether an act is a crime or not : he may give his judgment on the person's mental condition without committing himself further, as the doctor pronounces a man to be dead without thereby asserting him to be murdered. But this formal detachment cannot be maintained absolutely . the definitions of crime and of insanity are for practical purposes inseparable.

To this fact we owe the development of Criminal Psychology and that modification of it which goes by the more fortunate title of Criminalism. These topics lie beyond the boundary of our subject. Those who would pursue psychology into these complex applications must study the recent expositions, such as *Criminal Psychology*, by Hans Gross (1911) or *Modern Theories of Criminality* by C. B. de Quiros (1911).

NOTES

P. 11 Cp. Veitch, *Mind*, ii., for sketch of development

P. 12 Carmichael *vide* M'Cosh, *Scottish Philosophy*, p 36

P 12 Hutcheson Works, *An Inquiry into the Original of our Ideas of Beauty and Virtue*, 1725, *An Essay on the Nature and Conduct of the Passions and Affections*, 1728, *System of Moral Philosophy* (published 1754 by the author's son) Cp Scott, W A R, *F Hutcheson* (1900)

P 14 Works, as annotated by Hamilton, 1880, here used *The Inquiry into the Human Mind* (1764) was translated into German in 1782 The Essays, *On the Intellectual Powers* and *On the Active Powers*, were published 1785 and 1788 respectively

P 20 Biran see *Œuvres Inédites*, published by E Neville (Paris, 2 vols., 1859), consists chiefly of the *Fondements*, composed 1813–1822 Also *Science et Psychologie, Nouvelles Œuvres Inédites de M de B* (Bertrand, 1887) On Biran and Ampère see *La Psychologie de l'Effort*, A Bertrand (1889) On Biran as real forerunner of Bergson and recent revival of Biran's ideas, cp *Aristotelian Society Proceedings*, 1911–12 Levy-Bruhl, *Hist of Mod Phil in France*, shows Biran's significance

P 24 See Hamilton in Reid's *Works*, ii 888

P 26 Brown Cp Stout, *Mind*, 1889, *English Psychologists compared with Beneke*, etc

P 29 Accounts of James Mill, by Bain (1882), Bower (*Hartley and Mill*), Ribot (*English Psychology*) The *Analysis* was printed 1829, 1869, and in 1878, with revision by J S Mill, Bain, and others Cp. also Höffding, H *Einleitung in die Englische Philosophie* (1874, German trans., 1889)

P 39 See *Fries und Kant*, by Elsenhans, T (1906) Sources are *Neue Kritik der Vernunft* (1807), *Handbuch der psychischen Anthropologie* (1820)

P 43 Text referred to is *Sämtliche Werke*, ed Kehrbach, 1890 Chief sources are *Psychologie als Wissenschaft* (vols v, vi), the essay *De Attentionis Mensura*, and the *Lehrbuch* (also in English) For applied psychology see the *Allgemeine Pädagogik* (1806) and the address *Ueber einige Beziehungen Zwischen Psychologie und Staatswissenschaft* (1821) Works on Herbart abound, special interest attaches to **Davidson, J., *A New Interpretation of Herbart's Psychology*.**

P 50 On the inner sense, *vide Werke*, vi 141 (*Psych.*, § 125). Also § 128, which contains the passage paraphrased here (the musician, etc.)

P. 53 On the infinite process see *Textbook*, p. 57 (Eng trans). "The inner sense rises in a scale of higher and higher powers *ad infinitum*, e g we may observe our self-observation, and again an observation of that, and so on for ever" This passage seems to be influenced by Hume. In *Psych als Wiss*, § 127, we read "The highest apperceivent is not again apperceived"—a return to the less fluid (or functional) view of self

P. 58 Diagrams of series are given in v 409 (*Psych*, § 100)

P 63 Works used are. (*a*) *Lehrbuch der Psychologie als Naturwissenschaft*, ed J G Dressler, 1877, (*b*) *Die Neue Psychologie*, 1845, containing interesting historical notes, (*c*) *Psychologische Skizzen*, 1825 B also wrote *Pragmatische Psych* (1850), and conducted an *Archiv f Pragm Psych*, 1851–3

P 83 On Schopenhauer the most interesting monograph for psychologists is Ribot's work, *La Philosophie de S* (1900), also T. Ruyssen, *Schopenhauer* (1911)

P 84 See Erdmann, *Hist Phil*, iii 212, § 344

P. 92 Gall see Blondel, D, *La psychophysiologie de G* (1914).

P 95 See for history and theory (with special reference to P Marie) Moutier, *L'Aphasie de Broca*, 1908 Cp also Ladd, *Elements*, ed 2, 1911, p 258 The *langage intérieure* occupied a number of writers, among whom the best known was Egger, V, *La parole intérieure* (1881)

P 101 See Brown-Séquard, *Lectures on the Physiology and Pathology of the Central Nervous System* (Philadelphia, 1860), W McDougall, *The Nature of Inhibitory Processes*, *Brain*, Pt ii, 1903

Setschenow wrote in 1863 *Ueber d Hemmungsmechanismen f d Reflexthätigkeit* Chain-reflexes were especially treated by S Exner, *Entwurf einer physiologischen Erklärung psychischer Erscheinungen* (1894) Cp Loeb, J, *Physiology of the Brain*, Sherrington, C S, *Integrative Action of the Nervous System*

P 104 See further in *Journal of Experimental Zoology*, 1910 (R G. Harrison, "Outgrowth of the Nerve-Fibre), *Scientia*, 1914 (F Bottazzi), Herrick, C J, "Introduction to Neurology" (1915), Barker, L F, "The Nervous System and its Constituent Neurones" (1901).

P 105. Chemical processes, see *Rev Philos*, 1914 (i), G. Bohn, "L'Activité chimique du cerveau," where the chemical analysis is regarded as completing the abolition of psychology as introspective! See also H Piéron, *Scientia*, xvii 39 (1915), "L'attitude objective dans la psychologie moderne", *Scientia*, 1914, F. Bottazzi The latter reports the conclusions of T B Robertson [Folio Neuro-Biologica, vi 553, vii 309 (1912–13)] on autocatalytic processes, these have been specially commended to psychologists by Boris Sidis, *Psychology Normal and Abnormal* (Appendix).

P 108 On the later forms of this doctrine see Külpe, *Outlines*, 82: As the specific energy of the "nerves" is "an altogether improbable hypothesis," the "specialty of function" is now looked for "not in the nerve, but in the peripheral or central termini of the nervous apparatus" To use an analogy, the electric wire rings a bell or turns on a light according to its "terminus," and is itself "indifferent" Mueller's position is considerably modified by the later discovery that some sensory nerves run from the brain to the sense-organ (p 85) [The function of the nerve is to conduct: the adaptation of the termini through evolution involves a certain degree of selective action]

P 111 On Weber see Titchener, *Exp Psych*, ii 2 The "Law" was first formulated 1834 The Article (in Wagner's *H W B*) on "Der Tastsinn und das Gemeingefühl" appeared in 1846, separately 1849

P 120 The subject of colour vision is very adequately treated by J H Parsons, *An Introduction to the Study of Colour Vision* (Cambridge Psychological Library, 1915) Theories not discussed in the text (chiefly those of Wundt, Ladd-Franklin, and McDougall) are there described with references

P 122 Meyer, M (*University of Missouri Studies*, Science Series II, 1907) rejects basilar membrane theory and resonance theory. For recent work see Watt, H J, *The Psychology of Sound*, 1917

P 135. See the detailed account in Titchener, *Exp Psych*, ii i, xxii The impossibility of adding or subtracting sensations was pointed out by J Tannery, *Revue Scientifique*, 1875, and emphasised by J Delboeuf, *Examen critique de la loi psychophysique*, 1883 For Boas see Pflüger's *Archiv*, xxviii, 568 Titchener (*op cit*, cvi) points out that the method of just observable differences was used by Delezenne 1826, and Weber 1831, Vierordt (1852) employed that of right and wrong cases, Steinheil that of average error (1837)

P 139 In addition to the *Medicinische Psychologie*, see *Outlines*, ed G T. Ladd (1886), *Metaphysic* (Eng trans), iii § 238, *Logic* (Eng trans), ii § 333, *Microcosmus*, Eng trans ed 4, vol i

P 152 Wundt *Outlines*, Eng trans, 1907, *Human and Animal Psychology*, Eng trans, 1892; *Grundzüge d Physiol Psychologie*, (6th ed, 1908). Not the least important is the exposition of principles, *Logik*, iii In general, *vide* König, *Wundt, Als Psycholog u als Philosoph* (ed 3, 1909), Eisler, *Wundt's Philosophie u Psychologie*, 1902; Hall, G S, *Founders of Modern Psychology*

P 171. On Horwicz, cp Ribot, *German Psychology* Avenarius: *Kritik d. reinen Erfahrung*, 1890, *Der Menschliche Weltbegriff*, 1891. (Also, 1876, *Philosophie als Denken d welt gemäss d Princip des kleinsten Kraftmasses*) Cp. Wundt, *Phil. St*, xiii.

P 173. See Külpe, *Outlines*, 244, for good statement of this "method of expression." Mosso's work was *Sulla circolazione del sangue nel cervello dell' uomo*, 1880, more usually quoted from the

German translation (1881), *Ueber den Kreislauf u s w.* Lehmann's views are similar to those of Meynert, described in Külpe (p. 273). In his book on *W. James* (p. 94) Boutroux says. "In the *Annales de la Société linnéenne de Lyon*, t lviii (1911), M Nayrac shows that about 1830 two French doctors, Ph. Dufour and P Blaud, had outlined a similar theory How far that theory was similar I do not know: some degree of similarity may be found in Descartes, Malebranche, and others (*vide* ii 211, 230) Lange (p 91) quotes also an Italian writer (eighteenth century) Cp E B Titchener's "Historical Note" in *Am. J. Ps*, 1914

P. 178 For later aspects see Cannon, W B, *Bodily Changes in Pain, Hunger, Fear, and Rage*, 1915. Review of the situation in *Psychol Rev*, xxiii (1916), by J R Angell

P. 207. Martineau *Essays, Philosophical and Theological* (1883)

P. 213 See Thomson, J. A, *Herbert Spencer* (1906), Gaupp (Frohmann's *Klassiker*), 1900, Ribot, *Eng Psych*, Ferri, L, etc

P 219 See Mill, *Logic*, Bk vi, chap 3–5, and in *Dissertations and Discussions, passim*

P 229 Ward, in addition to the *Encycl Brit*, as here quoted, see *Naturalism and Agnosticism, passim*, and articles in *Mind*, N S, ii., iii ("Assimilation and Association"), *Phil Rev*, xiii (1904), "Present Problems"

P. 244 Cp Picavet, *Les Idéologues*

P 248 See Ribot, *Mind*, ii, 1877 The report by F Ravaisson, *La Philosophie en France au XIXe Siècle* (1867), is comprehensive for earlier period Later work epitomised by Boutroux, *Rev de M et de M*, 1908

P 255 Cp L van Becelaere, *La Philosophie en Amérique* (1607–1900), 1904. Sketch of development in *Psych Rev* i, by J. M Baldwin

P. 271 Cp. Ossip-Lourié, *La Philosophie Russe Contemporaine* (ed 2, 1905), N. Vinogradoff, *Étude historique sur l'activité de la Société de Psychologie de Moscou*, 1885–1910 On method of Pawlow, *Psych Bulletin*, 1909; also *The Work of the Digestive Glands*, tr W H Thompson, 1910

P 272 See Tsunazo Kishinami, *The Development of Philosophy in Japan* (Princeton, 1915)

P. 276 Cp especially Villa (2), Cap ii.

P. 279 See *Am J. Ps*, ii, 1888, for more detailed account (E. C. Sanford, "Personal Equation") Ribot, *German Psychology*, pp. 252–3, names other investigators with refs Cp Scripture, *The New Psychology*. Benussi, V., *Psychologie der Zeitauffassung* (1913).

P 283 See *Année Psych.*, 1912 (Bovet), for bibliography of articles, etc The following are references to sources :—

1900, Marbe, K., *Experimentelle Untersuchungen ueber das Urtheil.*

1905. Watt, H. J., "Experimentelle Beiträge zu einer Theorie des Denkens," *A. f. g. Ps.*, iv.

1906. Messer, A., "Exp. psych. Untersuchungen ueber das Denken," *A. f. g. Ps.*, viii.

1905. Ach, N., *Ueber die Willenstätigkeit u. d. Denken*, 1910. *Willensakt und Temperament.*

See Kostyleff, "Les travaux de l'école de Würzbourg," *Rev. Philos.*, 1910 (lxx.). Titchener, E. B., *Lectures on the Experimental Psychology of the Thought-Processes* (1909). In this book (p. 198) will be found adequate reference to the influence of the logical doctrines advanced by Meinong and others; also (p. 200) to the work in America of Woodworth, Calkins, and others.

P. 286. See, e.g., **Boas, F.**, *The Mind of Primitive Man.* In the department of Ethnic Psychology the Torres Straits Expedition marked an era. See also Boas, F., *Psychological Problems in Anthropology* (Clark University), 1909.

P. 289. Examples are Lévy-Bruhl, *Les Fonctions mentales dans les Sociétés Inférieures.* Durkheim, *Formes élémentaires de la vie religieuse*, maintains an interesting view. Human nature is dual: the social life tends to produce a group of ideas not attached to one's body (hence religion undervalues the corporeal), and these occupy the conceptual plane (i.e. concepts are collective and belong to a plurality of persons).

P. 290. Cp. A. Matagrin, *La Psych. Sociale de G. Tarde* (Paris, 1910). T. wrote *La Criminalité comparée*, 1886; *Les lois de l'imitation*, 1890; and many other works on penology and sociology.

P. 293. Le Bon, G., *Psychologie des Foules*, 1895; *L'homme et les sociétés*, 1878. *La Psychologie de la Révolution Française* is a specific application of this method to history.

P. 297. See *Mind*, ii., 1877, for the articles by Darwin, Taine. For account of developments in England and America, cp. Tracy, F., *Z. für Pädag. Pathol. u. Therapie* (1907).

P. 299. Brehm, *Tierleben.* Schultze, F., *Die Tierseele*, 1868 (and other works, to 1896); Büchner, L., *Geistesleben d. Tiere*, 1881; Girod-Marshall, *Tierstaaten u. Tiergesellschaften*; Kraepelin, K., *Naturstudien im Hause* (ed. 2, 1901).

P. 301. Romanes (1848–1894). *Mental Evolution*, 1878; *Animal Intelligence*, 1882; *Mental Evolution in Animals*, 1883; *Mental Evolution in Man*, 1883. Haeckel, E., *Generelle Morphologie der Organismen*, 1866; *Die Perigenesis d. Plastidule*, 1876; *Die Welträtsel*, 1899; *Zellseelen und Seelenzellen*, 1909, and many other scientific works.

P. 303. Comp. Psych.: see Reviews in *L'Année Psychologique*, 1905–6; also reports in same journal, 1904, 1912. For general discussion see H. S. Jennings, "Diverse Ideals, etc.," in *Lectures and Addresses, Twentieth Anniversary of Clark University*, 1909 (Worcester, Mass., 1910). Cp. *Am. J. Phys.*, viii., "Contributions to the Study of the Lower Organisms." Some of the important works which may be consulted are —

- 1880 Schneider, G. H., *Der Tierische Wille*
- 1884. Kussmaul, *Untersuchungen ueber das Seelenleben des neugeborenen Menschen*
- 1890 Loeb, J., *Der Heliotropismus der Tiere u.s.w.*, *Ueber die Bedeutung der Tropismen für die Tierpsychologie; Studies of General Physiology*, 1905
- 1893 Morgan, Lloyd *Introduction to Comparative Psychology; Instinct and Habit*, 1896
- 1898 Mills, W., *Nature and Development of Animal Intelligence* Thorndike, *Animal Intelligence*

(From this point began the wider movement, comprising many studies in America, e.g., by Yerkes, Porter, Watson, Parker, Holmes, Small.)

- 1907 O. Zur Strassen, *Die Neuere Tierpsychologie*
- 1908 Washburn, M. F., *The Animal Mind*
- 1909 G. Bohn, *La Naissance de l'Intelligence*
- 1910 G. Bohn, *La Nouvelle Psychologie Animale*
- 1909 J. von Uexküll, *Umwelt und Innenwelt* Wasmann, E., *Die psychischen Fähigkeiten der Ameisen*

A distinction must be made between general biological theories and specific psychological points. Heredity belongs to the former, but when a subject like instinct is discussed the question of heredity is inseparable from the interpretation of mind. For history and criticism of views see Ziegler, H. E., *Der Begriff des Instinktes* (1910). The works of Karl Groos (*Die Spiele der Tiere*, 1896, 1907; *Die Spiele der Menschen*, 1899) have important bearing on general psychology.

In 1898 A. Bethe (*A. f. d. ges. Physiologie*, lxx.) denied that ants and bees are anything but machines. This represents the extreme development of that school. Against this, A. Forel (*Sinnesleben der Insekten*, 1910) has advocated a more acceptable view, making action depend partly on inherited tendency, partly on individual adaptation and plastic variation. Histology tends to support the view that the factors in animal behaviour are both racial and individual. The work of J. H. Fabre should also be noticed.

P. 306. For references see B. Hart, *Freud's Conception of Hysteria*, *Brain*, xxxiii. The periodicals of this school include *Jahrbuch für Psychoanalytische Forschungen*, *Zentralblatt für Psychoanalyse*, *Imago*. Freud's works have been translated by A. A. Brill. The development of the doctrine has been due chiefly to Freud, Adler, and Jung (*Theory of Psycho-Analysis*, tr. N.Y., 1913; *Analytical Psychology*, 1916, etc.). Adler, *Ueber den Nervösen Character*, has also been translated. See also Bleuler, *Dementia Praecox* (1912); Ernest Jones *Papers on Psycho-analysis* (1913).

P. 308. See the works of Gross, H., *Kriminalpsychologie*, 1897; Wertheimer, and Klein especially.

GENERAL WORKS AND ABBREVIATIONS

American Journal of Psychology (*Am. J. Ps.*)
Année Psychologique (*An. Ps.*).
Archiv für die gesammte Psychologie (*A. f. g. Ps.*).
Archiv für Geschichte d. Medizin (*A. f. g. M.*).
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Das natürliche System der Geisteswissenschaften im 17 Jahrh. (*A. f. G. Ph.*, v., vi., vii.).
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